EDISON ELECTRIC INSTITUTE BULLETIN

TECH.

JUNE, 1936

TECH.

CONVENTION NUMBER

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EDISON ELECTRIC INSTITUTE

STATISTICAL DATA OF THE ELECTRIC LIGHT AND POWER INDUSTRY

Compiled Monthly by the Edison Electric Institute—Covers 100% of the Industry

DURING THE MONTH OF APRIL (Preliminary)

	1936	1935	%
Kilowatt-hours Generated* (Net)			
By Fuel	4,616,385,000	3,944,880,000	+17.0
By Water Power	3,640,805,000	3,347,020,000	+ 8.8
Total Kilowatt-hours Generated	8,257,190,000	7,291,900,000	+13.2
Additions to Supply			
Energy Purchased from Other Sources	159,580,000	186,495,000	−14.4
Net International Imports	84,645,000	66,989,000	+26.4
Total	244,225,000	253,484,000	− 3.7
Deductions from Supply			
Energy Used in Electric Railway Departments	47,460,000	47,040,000	+ 0.9
Energy Used in Electric and Other Departments	116,965,000	116,120,000	+ 0.7
Total	164,425,000	163,160,000	+ 0.8
Total Energy for Distribution	**8,336,990,000**	**7,382,224,000**	**+12.9**
Energy Lost in Transmission, Distribution, Etc.	**1,267,563,000**	**1,156,894,000**	**+ 9.6**
Kilowatt-hours Sold to Ultimate Consumers	**7,069,427,000**	**6,225,330,000**	**+13.6**
Sales to Ultimate Consumers (kw-hrs)			
Domestic Service	1,222,513,000	1,101,684,000	+11.0
Commercial—Small Light and Power (Retail)	1,280,681,000	1,128,673,000	+13.5
Commercial—Large Light and Power (Wholesale)	3,842,073,000	3,327,381,000	+15.5
Municipal Street Lighting	192,803,000	186,320,000	+ 3.5
Railroads—Street and Interurban	375,256,000	365,370,000	+ 2.7
Railroads—Electrified Steam	86,218,000	69,096,000	+24.8
Municipal and Miscellaneous	69,883,000	46,806,000	+49.3
Total Sales to Ultimate Consumers	7,069,427,000	6,225,330,000	+13.6
Total Revenue from Ultimate Consumers	$165,702,900	$156,069,100	+ 6.2

DURING TWELVE MONTHS ENDING APRIL 30th

Kilowatt-hours Generated* (Net)			
By Fuel	59,262,912,000	53,502,861,000	+10.8
By Water Power	36,815,625,000	32,852,229,000	+12.1
Total Kilowatt-hours Generated	96,078,537,000	86,355,090,000	+11.3
Purchased Energy (net)	2,995,995,000	2,968,367,000	+ 0.9
Energy Used in Electric Railway and Other Departments	1,945,585,000	1,981,700,000	− 1.8
Total Energy for Distribution	**97,128,947,000**	**87,341,757,000**	**+11.2**
Energy Lost in Transmission, Distribution, Etc.	**16,283,497,000**	**14,905,921,000**	**+ 9.2**
Kilowatt-hours Sold to Ultimate Consumers	**80,845,450,000**	**72,435,836,000**	**+11.6**
Total Revenue from Ultimate Consumers	**$1,958,265,500**	**$1,865,036,200**	**+ 5.0**
Important Factors			
Percent of Energy Generated by Waterpower	38.3%	38.0%	
Domestic Service (Residential Use)			
Average Annual Consumption per Customer (kw-hr)	692	642	+ 7.8
Average Revenue per kw-hr (Cents)	4.90¢	5.23¢	− 6.3
Average Monthly Bill per Domestic Customer	$2.83	$2.80	+ 1.1

BASIC INFORMATION AS OF APRIL 30th

Generating Capacity (kw)—Steam	23,974,800	23,760,800	
—Waterpower	9,011,400	8,951,700	
—Internal Combustion	498,700	502 500	
Total Generating Capacity in Kilowatts	33,484,900	33,215,000	
Number of Customers			
Farms in Eastern Area (Included with Domestic)	(589,490)	(535,939)	
Farms in Western Area (Included with Commercial—Large)	(219,298)	(211,373)	
Domestic Service	21,189,020	20,587,284	
Commercial—Small Light and Power	3,773,275	3,732,376	
Commercial—Large Light and Power	491,365	496,963	
Other Ultimate Consumers	63,916	71,585	
Total Ultimate Consumers	25,517,576	24,888.208	

* By courtesy of the U. S. Geological Survey with deductions for certain plants not considered Electric Light and Power Enterprises.

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EDISON ELECTRIC INSTITUTE BULLETIN

Volume IV JUNE, 1936 No. 6

The Institute's Fourth Annual Convention

THE FOURTH ANNUAL CONVENTION of the Institute held at St. Louis, June 1 to 4, ranks high among the successful Conventions of the electric light and power industry. The papers and addresses around which the Convention was built were of unusual quality and completeness, presenting and interpreting material of vital usefulness on major problems of the industry. Utility finance, governmental competition, rates, cost of electric service, accounting problems of today, farm electrification, sales development from many angles, the utility and its employees, and recent technical advances being among the subjects before the Convention.

Several hundred executives from the Eastern Seaboard made the trip to the Convention, and other sections of the country, including the Pacific Coast, the Southern and the Great Lakes States were well represented, as of course, were the companies located nearer to St. Louis.

Despite the onslaughts of governmental and quasi-governmental agencies with which the utilities have become so familiar during the past few years, optimism for the future of the industry was everywhere present. The spirit of confidence and the determination to fight its problems through to a finish, so apparent at last year's Convention, were even more manifest this year at St. Louis.

St. Louis, and particularly the Union Electric Light and Power Company, proved delightful hosts. Mr. Egan, the President, and Mr. Spoehrer, the Secretary, as well as many of the charming young ladies and energetic young men of the company, well deserved and won the thanks of the Convention for the manner in which they contributed to the efficient operation of the Convention, and for the courtesies so graciously extended to the delegates. Pleasant weather during the week also added to the enjoyment of the Convention.

Mr. Charles W. Kellogg, Chairman of the Board of the Engineers Public Service Company, was elected to the Presidency of the Institute to succeed Mr. McCarter, who has served so ably in that post for the past two years. The sentiment of the Institute towards Mr. McCarter was well expressed by Mr. J. F. Owens at the closing session, when, addressing Mr. McCarter, he said:

"You, sir, for the past two years, have rendered yeoman service to a great industry. No one knows but you, and you are too modest to tell, the sacrifice entailed in rendering this service. These have been very trying times. Throughout these trying times, you have provided a leadership unparalleled, in our judgment, in that of any industry in the country.

"It is no more than fitting that you do not lay down the burden of this office without some recognition on the part of your co-workers, of your splendid leadership, your untiring effort, your remarkable service to the industry, and, sir, I should like to present a resolution to this body and ask that it be adopted by a rising vote, with your permission.

"WHEREAS, during his term of office as President of the Edison Electric Institute, Mr. McCarter has been confronted with the most unusual, difficult and trying problems, to which he has given unsparingly of his time and his mature judgment. And

"WHEREAS, Mr. McCarter's administration will always be held in the highest esteem by the members of the Institute;

"THEREFORE, be it resolved, that this Convention give a rising vote of thanks in appreciation of the unselfish, loyal and untiring work of Mr. Thomas N. McCarter, as President of the Institute during the last two years."

Mr. F. H. Nickerson, Vice-President of the Consolidated Edison Company, was elected Treasurer to succeed Mr. Edward Reynolds, who has held that post since the organization of the Institute. Other officers of the Institute were reelected to their former posts.

Mr. Reynolds was elected to the Board of Trustees as were also Mr. Kellogg and Mr. A. C. Marshall, Vice-President, The Detroit Edison Company. Trustees whose terms expired this year were reelected as follows: Messrs. James B. Black, James F. Fogarty, Thomas N. McCarter, J. J. O'Brien, H. Hobart Porter, James Simpson, Herbert A. Wagner and Wendell L. Willkie.

Meetings were held during the Convention by the Board of Trustees, the Operating Committee, the Sales Committee and the Statistical Committee, at which plans were made for further

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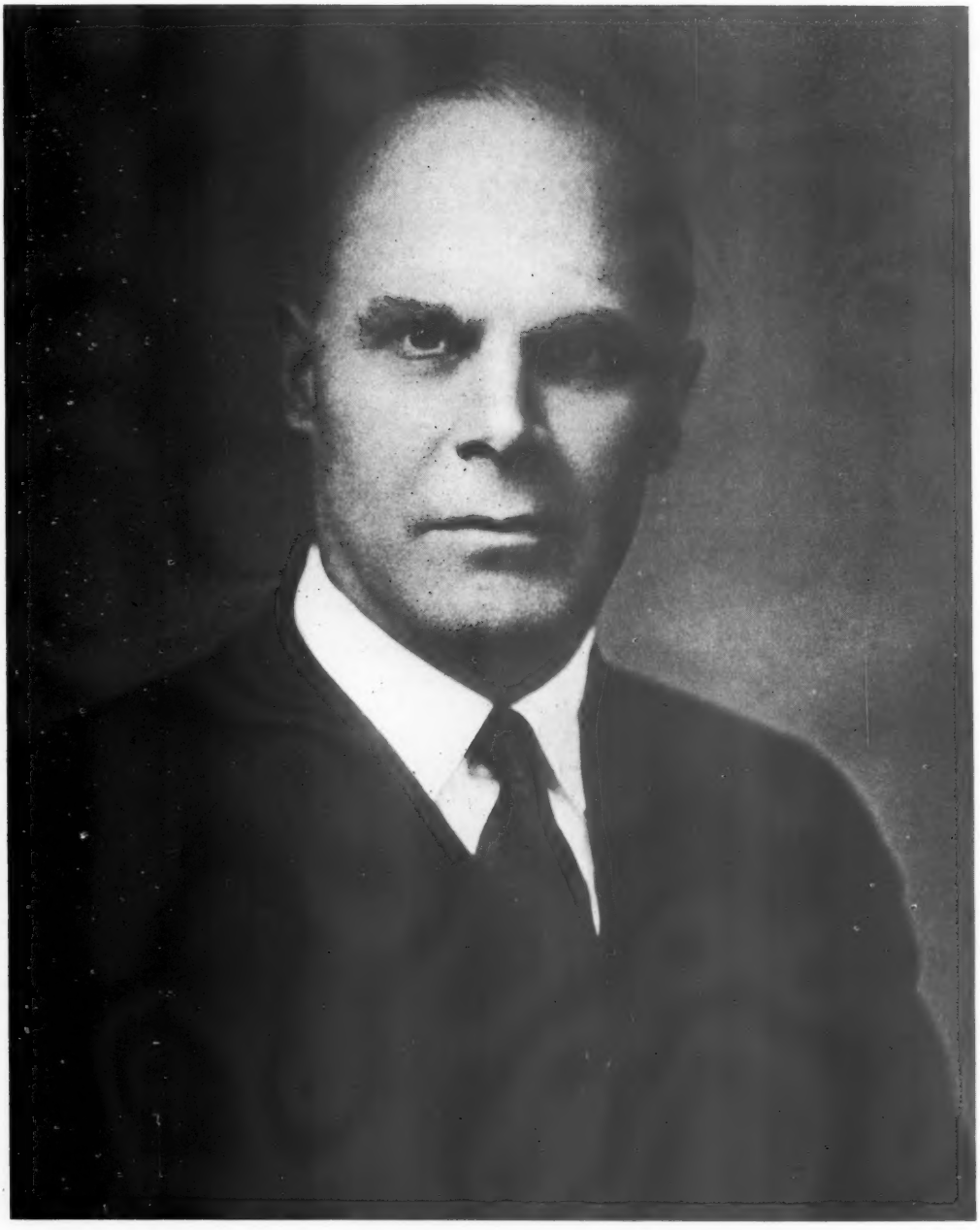


CHARLES W. KELLOGG

President of the Edison Electric Institute

"I pledge you my best efforts during the coming year"

EDWARD REYNOLDS
Newly elected Trustee

broadening and increasing the usefulness of the Institute to its members.

The five general sessions of the Convention were held at the St. Louis Municipal Auditorium.

First Session

The first session opened at 2:30 Monday afternoon with Mr. McCarter in the chair. After a graceful introduction by Mr. McCarter, Mr. Egan welcomed the delegates in hearty manner and pointed out that this was the third occasion on which the Institute or its predecessor association had met in St. Louis. The first time, he said, was in 1893—43 years ago—and again in 1910.

Mr. Egan told the delegates that although great changes had occurred in the electric business in that interval, many of the fundamental principles were exactly the same. He sketched briefly the history of Missouri and of St. Louis and told of the founding of the City of St. Genevieve in 1735, and the beginning of St. Louis a few years later. He stated that "St. Louis is probably one of the most representative cities in the country embracing as it does the French and German influence, as well as the influence of the sturdy pioneers who came to Missouri from Virginia, Tennessee and Kentucky." He closed by extending a welcome "in which the aggressiveness of the virile north is mingled with and softened by the gracious charm and hospitality of the south."

Other speakers at this session were Messrs. Norman R. Gibson, Buffalo Niagara and Eastern Power Corporation; W. G. Vincent, Pacific Gas and Electric Company; L. R. Nash, Stone and Webster Enginering Corporation; H. L. Gruehn, Consolidated Gas, Electric Light and Power Company of Baltimore; and H. B. Gear, Commonwealth

A. C. MARSHALL
Newly elected Trustee

Edison Company. Mr. Vincent's paper on Rate Reductions and Mr. Nash's paper on the Fundamentals of Utility Accounting are published in full in this issue. The remaining papers including one on the Cost and Economic Value of Accounting Elaborations by Mr. C. E. Kohlhepp and one on Merchandise Accounting by Mr. W. H. Swinney, will be printed in the July number of the BULLETIN.

CHARLES W. KELLOGG

Charles W. Kellogg, newly elected president of the Edison Electric Institute, has devoted his entire business career to the public utility industry. He has served, since his graduation from the Massachusetts Institute of Technology in 1903, with Stone & Webster or affiliated organizations, acquiring an unusual breadth of experience in the three main branches of the utility business—operating (both hydro and steam), finance and engineering.

Since 1934 he has been Chairman of the Board of Engineers Public Service Company, a public utility holding company controlled by Stone & Webster. Previously he had served as president of Engineers Public Service since shortly after its formation in 1925.

Mr. Kellogg was born in Philadelphia February 27, 1880. He received his B.S. degree at Massachusetts Institute of Technology in 1902, earning his Master's degree in Science in 1903. After graduation he began work with Stone & Webster, becoming Manager of the Edison Company of Brockton, Mass., in 1905. Subsequently he spent nine years in Texas, at various times serving as manager of the electric light and power properties in El Paso and in the Gulf Coast region, as well as manager for several years of the Texas Securities Department.

His experience in operating utility properties was further enhanced by service at Keokuk, Iowa, where from 1914 to 1919, he was manager of the Mississippi River Power Company (The Keokuk Dam). During the latter two years he was also manager of the Middle West District for Stone & Webster. He returned to the East in 1919, and for the next six years was located at the Boston office of Stone & Webster, being engaged in expert work on reports, appraisals, etc., including work for the Interborough Rapid Transit Company of New York, and the Conowingo project on the Susquehanna River. In this period also, he had charge of organizing and conducting local securities sales campaigns for operating companies.

Since coming to New York in 1925 as head of the Engineer's Public Service Company, he has won recognition throughout the industry for his exceptional qualifications in utility leadership, both in matters of administration and policy.

Mr. Gibson spoke on the Cost of Electric Service, stressing customer density and customer use as important factors. The customer virtually rents a portion of the generating transmission and distribution system, so that the customer and the company enjoy a sort of landlord-tenant relationship, said Mr. Gibson. Public service companies must meet constant competition of substitutes for the service, he pointed out. Cost of capital and the taxes therefor for facilities may be of more weight than operating expenses as such in a cost analysis.

No arbitrary rule, therefore, can be made for determining what a rate shall be, said Mr. Gibson. Cost of service to any one class of consumer is a will of the wisp and there are as many costs as there are theorists trying to find the answer. Mr. Gibson called attention to the fallacy that increased usage varies directly with rate reductions.

The unsound principles now advanced outside the industry called the theory of original cost might better be called aboriginal cost, said Mr. Gruehn. Doubts would be cast upon 80 to 90 per cent of total fixed assets and the resulting items under the aboriginal cost theory would be misstated. Not only would there be a theoretical segregation of fixed assets which would be meaningless of itself, but new theories of retirement would be made retroactively and calculated upon an unsound theory, while many of the principles attacked by Mr. Gruehn have been condemned by the New York Appellate Court.

Cost to the accounting company cannot be determined under the theory of aboriginal cost, the speaker claimed, and he asked for some sound thinking on fundamental principles applying to value, to depreciation and to reserves.

Problems of inventories of public utility were discussed by Mr. Gear. Overrefinement of detail often adds to the expense of making inventories, the speaker said, and can be largely eliminated by reducing the number of subdivisions of equipment for which records are kept. Inventory problems of different utility systems vary according to the character and density of the territory in which the utility operates, he said.

Second Session

Speakers at the Second General Session held Tuesday morning were Walter F. Mallory, Secretary and Director of the Thomas Alva Edison Foundation National Campaign, President McCarter, Mr. George E. Whitwell, Vice-President, Philadelphia Electric Company, Mr. J. F. Owens, President, Oklahoma Gas and Electric Company, and Mr. Harper Sibley, President of the Chamber of Commerce of the United States. The addresses of all these speakers are printed in this issue.

F. H. NICKERSON
Treasurer of the Institute

Third Session

Four of the addresses at the Third Session Wednesday morning are printed. Those of Mr. Floyd L. Carlisle, Chairman, The Consolidated Edison Company, S. M. Dean, the Detroit Edison Company, Mr. C. W. Kellogg, Chairman, Engineers Public Service Company, and Dr. E. A. White, Director, Committee on the Relation of Electricity to Agriculture.

Three papers on various aspects of farm electrification presented by Messrs. E. A. Brand, Niagara Hudson Power Corporation, A. E. Silver, Ebasco Services, Inc., and Mr. W. W. Freeman, Vice-President, Columbia Gas and Electric Company, will appear in the July issue.

Further progress in the methods of wiring the farmer's own premises were described by Mr. Brand, in his speech on "New Developments in Farm Wiring." Mr. Brand called attention to the importance of the following three objectives:

Use of the lowest unit cost safe materials.

Adequacy within the customer's means.

Assurance that the wiring contract is fulfilled.

"An axiom to follow," said Mr. Brand, "might be: 'What wiring is done, do well.' The customer's installation is important to healthy commercial growth of the utility supplying service, and is exceedingly susceptible to advances in technology.

"The farms and other rural prospects still to be connected to the lines represents practically the last major frontier of ready-made customers with homes and outbuildings to be wired. Let us work with them and guide them in the necessary technical operations to the mutual benefit of company and customer."

The fact that the investment required to build the lines and install the services constitutes the largest single obstacle to self-supporting farm electrification was emphasized by Mr. Silver in his address on "Developments in Farm Lines." Mr. Silver laid stress on the necessity for simplicity, safety and reliability of service.

"Service entirely adequate and satisfactory for the normal needs of the farm must be provided," he said. "This does not mean that standards of service practiced in urban areas should be transplanted to the farm without reflection upon unnecessary refinements. The farmer does not wish to pay for that which he does not need.

"Farm lines and customer installations must be designed and built for reliability and good life. Servicing and maintenance attention must be kept low. This, however, does not necessarily mean that materials should be selected from urban practice. Safety must be a foremost objective. Simplification of design, aiding ample primary working clearances, provides safety.

"The aim—all available reduction of investment costs—calls for all practical simplification, both in major features and in details. In the present stage of the farm line development, it is important to seek savings, even though of only a few cents, in every possible item. These minor savings when added up, constitute a large item in the whole.

"It will not be surprising if the operations of the Rural Electrification Administration serve in many ways to confirm the soundness of the policies already pursued by the electric light and power industry," declared Mr. Freeman in his address on the "Relations of the Industry and the Rural Electrification Administration." "The utility companies will continue to extend their rural and farm service as rapidly as is believed to be consistent with their obligations to all of

(*Continued on page* 259)

Address of the President

By Thomas N. McCarter

President, Edison Electric Institute

Address before the Second General Session of the Fourth Annual Convention of the Edison Electric Institute, St. Louis, Mo., June 2, 1936

ANOTHER year has rolled around since we met in convention at Atlantic City, at which time it was my privilege to address you upon the condition of the industry and the tremendous problems which confronted it. Without attempting to repeat them in any detail as they were then set forth, I feel it to be my duty upon this occasion to bring down to date the status of the industry in its various aspects.

The Holding Company Legislation

During the summer of 1935, the Congress passed and the President signed the so-called Wheeler-Rayburn Holding Company Bill, in a somewhat modified form from that in which it was originally introduced, but still highly objectionable in substance; clearly designed in Title I of the Act to ultimately destroy Public Utility Holding Companies; and in Title II to regulate in the most minute details, except as to local rates, all such companies engaged in any form of interstate commerce. So far as I know, this act has been pronounced to be unconstitutional by all lawyers who have studied it, except those of the Government.

Holding Companies affected by the Act have, for the most part, declined to register with the Federal Securities and Exchange Commission, as required by the Act, and have ignored the same. Some have applied for exemption therefrom under the provisions of the Act, and a few have registered. The Trustees of the Institute employed the Honorable John W. Davis, who may be properly regarded as the leader of the American Bar today, to represent the Institute in contesting the constitutionality of the Act. What seemed to be a thoroughgoing test case existed in the State of Maryland, and in the hearings and arguments in this case, Mr. Davis participated. The Act was found to be unconstitutional by the District Judge before whom is was argued, and his decision was affirmed by the United States

MR. McCARTER

Circuit Court of Appeals, Fourth Circuit,—which Court, however, somewhat restricted the sweeping decision of Judge Coleman in the United States District Court. An application for a writ of certiorari was made to the Supreme Court of the United States to review this decision. This application was denied by the Supreme Court and so the decision stands as the law within the jurisdiction of that Circuit, but is not necessarily the law of the land until the Supreme Court has spoken.

Electric Bond and Share Co. Suit

A considerable number of other cases were commenced by companies in different parts of the country to test the constitutionality of the Act.

These suits the Government has sought to have held in abeyance until the issue could be tried out in a case of its own selection, and to that end has commenced suit against the Electric Bond and Share Company, which is now in course of preparation for trial. The Government has measurably succeeded up to the present time in having the other cases held back. This case will be defended by the Electric Bond and Share Company, and it has not yet been definitely decided whether counsel for the Institute will or will not participate therein.

Meanwhile, however, anticipating that in that case, it will be the policy of the Government to endeavor to smear the whole industry with propaganda of the character emitted in the Federal Trade Commission's reports, the Institute has been preparing itself, with great thoroughness, to meet any such attack should it come. Where wrongful practices have obtained, they will be admitted. But false innuendoes and charges will not go unanswered. In this preparation, the Institute has had the services of Professors John T. Madden and H. B. Dorau, ably assisted by Mr. William J. Hagenah. I am as confident as I can be of anything that is to take place in the future, that this Act, when it finally reaches the Supreme Court of the United States, will follow the other ten New Deal measures that have already been scrapped by it. So much for the Holding Company Bill!

T. V. A. Litigation

The decision of Judge Grubb, referred to in my last annual address, declaring the so-called T. V. A. Act to be unconstitutional, was reversed by the United States Circuit Court of Appeals, Fifth Circuit, and this decision of the said Circuit Court of Appeals was reviewed and affirmed by the Supreme Court of the United States in a decision which was narrowly limited and restricted to a consideration of the contract that had been executed by the T. V. A. and the Alabama Power Company, relating to the sale of power generated at the original Muscle Shoals plant,—the Court expressly reserving and excepting from the decision any consideration of the whole T. V. A. project as now planned and under partial construction.

I note with warm approval that nine-

teen operating companies adversely affected by this contemplated broader plan, have commenced suit to test the constitutionality of this huge project, involving a total expenditure of $475,000,000. This is the sum that they are now talking about, but Major Bennion, who knows more about this subject than I do, tells me that the ultimate cost of the grandiose scheme, if carried to a conclusion, will be in excess of $1,000,000,000. Perhaps he is right. But what is four or five hundred millions of dollars between friends in this day and generation!

In the very hot weather of last August, I personally made a tour of inspection throughout the whole T.V.A. district. It would, I think, be impossible to conceive of a more inexcusable and wasteful expenditure of a vast sum of public funds than is contemplated to be spent for the purposes of the T. V. A. yardstick in this sparsely settled and largely undeveloped territory, unless the proposed Passamoquoddy project, now temporarily deferred, is considered to go it one better in useless extravagance.

Municipal Power Plants

A third class of cases, quite numerous in number, are seeking to have a judicial determination by the Supreme Court as to the constitutionality or unconstitutionality of the Government's gifts and loans to municipalities for the erection of municipal lighting plants, to be operated in direct competition with existing facilities of private companies. Here again counsel representing the Institute have participated in this litigation, in the person of the Honorable Newton D. Baker of Cleveland, Ohio—one of the leaders of the American Bar, and one or more of his associate partners. The first case of importance to be heard was that of the Duke Power Company in North Carolina, which obtained a favorable decision upon this question in the District Court, which, however, was reversed by the United States Circuit Court of Appeals, Fourth Circuit, which held this character of loans and gifts to be within the power of Congress. A writ of certiorari to bring this decision to a review has been applied for and granted, and the case will be heard before the United States Supreme Court at its next ensuing term. It is hoped that a decision will be forthcoming on this very important question within this calendar year. Meanwhile there are many other cases raising the same question in various parts of the country, which are passing through the mill of litigation.

Was there ever an industry so unjustly, so unfairly, and so immorally attacked by a governmental agency as has been the lot of the Electric Industry? If it were not so serious, it would be almost humorous. Here is an industry which throughout its entire history, including the period of the great depression, has been constantly lowering its rates of service to the public, notwithstanding the tremendous burdens of taxation and otherwise that have been laid upon it, being attacked by a government which has itself spent not millions but billions of the taxpayers' money in unprecedented fashion, in furtherance of its various fantastic notions, many of which have already been declared null and void by the Supreme Court. I challenge comparison of the record of the Electric Industry in the regard of which I have spoken, with any other industry in the country. Its experience has been unique and reflects the greatest credit upon it.

What the attitude of the Trustees of the Institute in the future in regard to these matters will be, I do not pretend to say. But having put our hand to the plow, I do not think we should stop until these questions are all finally and fundamentally determined. Although, in view of all that has happened to date, I personally feel that the conduct of some of these litigations should hereafter be principally carried on, so far as possible, by the companies directly involved. The expense of it all to the Institute has been a serious matter but, happily, its resources are in a position to withstand it, although it will, temporarily at least, absorb all its surplus funds.

I may be over-optimistic, but I think I sense that the peak of this fight has passed. There never was any real basis for it except a few isolated cases of the mishandling of securities by certain manipulators and promoters, the wrongdoing of whom is in no sense chargeable to the industry as a whole. The issue, so far as it was an issue, was one that was politically manufactured. The public are beginning to see that there is nothing in it, and evidence abounds that the great mass of the people in this country are thoroughly satisfied with the service rendered by the industry and the extremely low prices charged for such service—which have now reached in the case of residential customers an average cost price to them of less than 10c per-day.

In this note of moderate optimism which I am striking in feeling that the worst is behind us, is a belief that the time has come when even the United States Government cannot go on wasting billions of dollars of the people's money in the fashion that has been going on for the last three years, and that boondoggling is not to have a permanent place as one of the great national sports of our country.

"The Utility Issue in 1936"

And yet we must not be over-confident. There was released yesterday in Washington — which has been brought to me by special messenger—a statement with ulterior purposes, in view of which I am going to read to you. It is signed by twenty-eight United States Senators and eighty-one Members of the House of Representatives — a little less than thirty per cent of the Senate and a little less than nineteen per cent of the membership of the House, and this is it:

It is entitled "The Utility Issue in 1936."

. . . . "Four years ago, many members of Congress in both House and Senate, without regard to party affiliations, warned the American people that the utility and banking interests were quietly working to control the nomination and election of candidates for the Presidency and the Congress.

"Since a like effort is now being made, we repeat that warning and call special attention to two methods, among others, intensified in use since that time, to thwart public control of the utility 'empires'.

"First. These corporations, and especially the holding companies, have redoubled their 'back home' lobby and political activities, not only to dominate local governments, but also as a means of increasing their influence in national affairs. They seek to manipulate the nominating and election machinery without regard to party, and usually employ concealed methods.

"Second. They are brazenly utilizing the very machinery of the courts—legal procedures set up to insure exact justice among men—as instruments in their private warfare to postpone and frustrate either effective regulation or public ownership, undertaken in response to public demand, for low rates.

"We refer not to legitimate suits testing valid legal questions, but to the endless number of abortive injunctions instigated for the sole purpose of delaying execution of the public will, after that will has been formally expressed through the processes of constitutional government, and often after contests have been decided against them in the highest courts.

"These suits, seldom brought with hope of success, are paid for by consumers and charged to operating expenses. They drain public treasuries, exhaust public patience, and paralyze the machinery of government. We submit that the multitude of suits of this character now pending against cities and towns, public utility commissions, rural power districts, States and Federal Government constitute a national scandal.

"The power war is by no means ended. The efforts of private corporations to minimize its importance and deflect public attention must not prevail. It must be carried forward in this election, and all elections, until the American people are masters in their own house, and until they shall be freed from exorbitant and unjust charges, and until electricity shall be supplied to every urban and farm home in America at rates the people can afford to pay." . . . .

The characterization of such a mendacious statement as this exceeds my power of expression in parliamentary language. Mr. Weadock just informs me that the man who wrote this and his wife are both on the T. V. A. payroll, which does not surprise me in the least. I also note that in the bill for relief which passed the Senate yesterday, running into enormous figures, that the second largest allocation in that bill as passed, of some $170,000,000 in this particular regard, is set aside for public utilities and sewers. Just what the two have to do with it is beyond me!

Regulation of Utilities

Governmental regulation of public utility properties in this country is now about thirty years old. The creation of state regulatory commissions followed some little time after the constitution by the Congress of the Interstate Commerce Commission, which however, at first, did not possess rate-making powers. This policy of regulation is now so thoroughly ingrained in the American governmental system that perhaps any discussion of it is academic. But perhaps it may not be amiss that I, who have had the rather peculiar experience of watching its progress and development from the vantage point of the same executive position throughout the entire thirty years, should give to you the benefit of my observations with regard to it.

It has an asset side and a liability side. So far as it refers to the character of properties with which we are concerned, it was started with the double purpose of regulating them as to adequate service and rates in the public interest and of preventing the indiscriminate granting of franchises for service to rival bidders in the same locality. This was a great evil of the early days which regulation has very largely, if not altogether, cured in the electric and gas business, though not in the transportation business. Then too the form of regulation generally adopted was that of state regulation by a state board, which was infinitely preferable to the attempt by municipalities to exercise the same general powers. I think it is generally recognized that a certain measure of regulation, as to service and the issuance of securities, by state boards has been of benefit to the public and not harmful to the companies.

Regulation or Management

I have no quarrel with proper regulation of public utilities. But I am unalterably opposed to it when it seeks to include management, for this is the worst kind of governmental ownership because it lacks financial responsibility. An extreme illustration of the evil to which I am referring seems to me to exist in the recent order of the Interstate Commerce Commission, directing the steam railroads in the eastern section of the country to very substantially reduce their rates, in many cases as much as fifty per cent.

It is a notorious fact that the railroads, under the rate of fare that has been existing, are not earning a fair return upon the value of their property devoted to the public use. Starting with this admitted fact, the Interstate Commerce Commission substitutes its judgment for that of the directors of the railroads and orders the reduction to which I have referred, upon the theory that it will increase the returns of the railroads from their passenger business. Maybe it will and maybe it won't. I do not pretend to know. The railroad directors say it will not. This, it seems to me, is management pure and simple as distinguished from regulation. And I am happy to see that most of the railroads affected are preparing to test its legality.

An Active Year

In all respects, the Institute has had an active year. Its committees have been called upon to deal with work of far-reaching importance to this industry. The Engineering, Insurance, Statistical and Rate Committees have done excellent work as usual. To enumerate all the matters handled by these committees is not practicable, but the overall effect of their work in progress and improvement in the industry is apparent to anyone who will take the trouble to compare present with past performance. The record shows continued improvement and these committees over a long period of years have played a large part in producing this splendid result, of such great value to the people of this country. For that matter, the whole world has profited greatly because the studies, reports and deliberations of these committees have always been eagerly sought after throughout the civilized world.

Work of Accounting Committee

The Accounting Committee, under the leadership of Mr. G. U. Stewart of the Philadelphia Electric Company, has been called upon for especially heavy duty. A proposal of the National Association of Railroad and Utilities Commissioners for a revised Uniform System of Accounts and also a Classification of Accounts proposed for adoption by the Federal Power Commission were referred to the Institute with a request for comments and suggestions. Both proposals called for much more elaboration in accounting than the existing Uniform Classification of Accounts adopted in 1922, and they would introduce important changes in some of the fundamentals of utility accounting and economics. If the principles suggested should be adopted by these authorities, and could be legally enforced, much of the value of the property of operating companies would be destroyed.

Both of these proposed systems of accounts were carefully reviewed and detailed criticisms were submitted as requested. Hearings between the accounting representatives of the industry and those of the National Association of Railroad and Utilities Commissioners and of the Federal Power Commission were held in Washington. These hearings will be followed by a conference between representatives of the Institute and the Commissioners of the Federal Power Commission themselves and also by a conference with the Executive Committee of the National Association of Railroad and Utilities Commissioners.

At the same time that criticisms of the proposed systems of accounts of the Federal Power Commission and of the National Association of Railroad and Utilities Commissioners were being prepared, our Accounting Committee also prepared its own proposed revision of the existing 1922 Classification of Accounts. Much care has been devoted to the preparation of this proposed revision. It represents a large amount of work by skilled and experienced accountants of the industry and when submitted to the National Association of Railroad and Utilities Commissioners it should command serious consideration on sheer merit. It was our privilege to hear this entire subject brilliantly discussed yesterday in the symposium led by Mr. Nash.

Work of Sales Committee

The work of the Sales Committee in promoting the use of electricity wields

an influence in our industry that can scarcely be overestimated. The various national sales programs in which this committee has played a leading part have not only succeeded in promoting the business of our companies but have served to create better understanding and a spirit of good will among the various branches of the industry and other business elements interested in the sale of electrical appliances. They serve also to call to the minds of our customers the value of their electric service.

The increases in kilowatthour sales to residence consumers during the past years are noteworthy and are in large part attributable to these sales programs. Started several years ago, they were slowed up somewhat during the worst years of the depression, but have since been gaining momentum. Several governmental agencies are claiming credit for this development but it should be observed that a sales program to promote the idea of electric refrigeration, for example, was launched on a nation-wide basis by this industry four years before the New Deal era, and other national sales campaigns had preceded that. It is necessary to go back twenty-five or thirty years for the beginning of sales programs.

The Electric Refrigeration Sales Campaign, started in 1929 and officially closed in 1934, was extraordinarily successful in building up this comparatively new use for electric current. Its effect continues. Sales of refrigerators in the first part of 1936 are far ahead of sales in any previous year. The Better Light —Better Sight Program, begun in 1933, is likewise gaining momentum and its influence will undoubtedly extend many years into the future. I feel that this will be true also of the Kitchen Modernizing Program which is destined to play a large part in the development of residential sales. In the matter of farm electrification also, the Institute, through its Rural Sales Committee, is helping to develop greater use for electricity on the farm, which will make it not only convenient but profitable to the farmer. Thus the Institute plays its part in the affairs of the industry and contributes its share toward advancing the general welfare.

Sales and Engineering Conferences

I desire to comment particularly on the value to the industry of the Annual Sales Conference held this year in March in Chicago, and the annual Engineering Conference held in May in Detroit, to which conferences are invited a wider group of representatives of power companies than the membership of committees, in order that a larger number of the men in the industry may enjoy the benefit that comes from attendance at such meetings. Plans are under way to establish the practice of holding an annual Accounting Conference also.

Less in the limelight than residence service, but of even greater importance to communities and to the people as a whole, is the progress that is being made in the greater use of electricity in industry.

Feeling the obligation to make available to the public authoritative information relating to the electrical industry, the Institute publishes regularly a large volume of statistical and technical information. In no other country in the world is such full and complete information concerning operation of the electric light and power industry made available to the public as in this country.

The engineering committees of the Institute have continued to carry on studies in the technical phases of this business. Their purpose is to keep the industry in the vanguard of improvement in the art of generating and distributing electricity and to insure the fact that our customers shall have the benefit and enjoy the economies of the latest and best developments in machinery, equipment and methods.

In the field of joint relations with other organizations, the Institute deals with a great variety of matters of mutual concern, with the object of advancing the interest of this industry consistent with the common interest and to prevent or minimize the development of difficulties and misunderstandings. During the year the extension of rural lines has caused some apprehension on the part of communication services, notably farm telephone organizations. The matter has been dealt with by the Institute in an effort to avoid the development of difficulty.

The Institute has contributed substantially in the rewriting of the National Electrical Code and in preparing new wiring specifications. Developments in the field of wiring are highly important in conjunction with our sales programs for electrical appliances to bring about the greater use of electric service.

Board of Trustees

During the year the Operating Committee and the Board of Trustees have met from time to time to deal with policy questions of general concern to our members, in addition to the usual business concerns of the industry. I might mention the program of the government for rural electrification and proposed additional legislation on that subject; the proceedings of the Securities and Exchange Commission and of the Federal Power Commission, relating to the Public Utility Act of 1935; the proposed Mississippi Valley Authority; the proposed Northwest Power Agency; new taxation legislation; and the proposed System of Accounts of the National Association of Railroad and Utilities Commissioners; all of which matters necessarily have required the attention of your governing committees.

The staff organization of the Institute has also been actively engaged. It will be appreciated that in an industry of the size and importance of ours there is a large volume of business to be handled in carrying out the routine programs laid down by the committees and in collecting and supplying information concerning the industry to its members and to those outside the industry who are interested in or concerned with its affairs.

I have at some length gone into, in detail, the routine work of the Institute, in order that those of you who do not come into close contact with the Institute may come to know the excellence and variety of the work that is being carried on by the organization.

Heroic Work During Floods

For sheer heroism, self-sacrifice and devotion to duty on the part of workers in industry, I recall no finer example than that displayed by employees of various utility companies during the unparalleled floods that devastated many sections of the Eastern states last March. The electric, gas, telephone and water companies as well as the railroads, did valiant service under extremely harrowing conditions. I dwell particularly, however, on the part played by the electric companies in restoring service in the stricken communities, not because their efforts were more worthy of commendation, but by virtue of my connection with the industry I happen to be more familiar with the assistance rendered in the electrical field.

We have become accustomed to feats of bravery and tremendous sacrifices by men and women in war times. We have known of great hardships endured by human beings in devotion to some particular cause. Not at all unusual are

stories of bravery and extreme courage in emergencies on the part of our public servants, such as firemen, policemen, and G-men. There is no peril we hesitate to confront in the protection of our loved ones.

But what particularly impressed me in this recent disaster was that this same spirit of unselfish disregard of personal injury or discomfort impelled employees of our great electric industries to hurl themselves into the terrific fight to maintain service at any cost. With no thought of personal reward or glory, these men and women were actuated by an innate sense of duty and loyalty. There was a job to be done—and they did it!

When the floods descended upon the municipalities and the water crept up foot by foot in the generating stations, the men who are responsible for electric service twenty-four hours a day, every day in the year—to homes, hospitals, stores, factories—realized that nothing short of herculean effort could keep that service intact. They went to work—in water up to their waists, without food, without water to drink, without sleep, without protection from live circuits—and continued at their tasks for twenty-four, forty-eight, even seventy-two hours, in many instances, in the vain endeavor to keep the current flowing, needed now more than ever before in the face of death and destruction on all sides. When the water continued to rise, the crews retreated to the upper floors amid the switching gear while the increasing violence of the floods threatened the boilers and the turbines. The fires were banked to prevent explosions and all efforts were concentrated on the "drying out" process.

In many localities temporary substations were built, emergency lines were run, switching equipment installed and feeders which had no power were connected to feeders which did have current. It was a continuous struggle against one of the most powerful of Nature's forces, and the story of how many lives were saved and how much human suffering was averted by the electrical workers can never be told.

Companies Lend Men and Materials

No story setting forth the heroic work of the employees is complete without recognition of the splendid manner in which various public service companies responded to the call for assistance from those more seriously handicapped. Throughout the stricken areas men and equipment were hurried from one com-

(*Continued on Page* 244)

The World Power Conference

Remarks of Floyd L. Carlisle

Chairman, Consolidated Edison Company

At the Fourth Annual Convention of the Edison Electric Institute, St. Louis, Mo., June 3, 1936

ON behalf of the American Committee in charge of the World Power Conference to be held in Washington, September 6 to 12 inclusive, I most cordially invite and urge your attendance at the Conference and your participation in the related study tours and meetings.

From the letters received from foreign countries, it appears there will be from five hundred to eight hundred delegates from Europe, South America and the Orient.

To pay certain of the expenses of the Conference and the study tours, the Edison Electric Institute has contributed $75,000, the electrical manufacturers $25,000 and the United States Government $75,000.

The Conference program will consist largely of discussions of papers which have been prepared and circulated in advance of the meetings. Tours both before and after the Conference have been arranged to the places in the Eastern United States which our visitors will desire to see. During these tours there will be round table discussions of the technical subjects. Probably these trips will be the most valuable to the foreigners of any phase of their visit here.

The primary object of the conference is to exchange information upon all aspects of power and fuels with particular regard to the latest developments.

This is the first World Power Conference to be held in the United States. The invitation to hold this Conference here was issued in 1930. While the Second World Power Conference was in progress in Berlin, the then President of our predecessor association, over an international hook-up which included Germany, England and the United States, invited the Conference to hold its next sessions in this country. It certainly was not staged to coincide with a national election campaign. It will be most unfortunate if it assumes anything of a political character. The government people active in the Conference give us every assurance that such will not be the case.

MR. CARLISLE

It is indeed fitting that this Third World Power Conference should be held in the United States. It was here and under the leadership and management of the very membership of this Institute that the world's greatest developments and utilization of power have occurred. Almost half of the world's production of electricity is consumed in the United States. About 95 per cent of the electric business of the United States is done by the private companies, most of which are members of the Institute, the trade association of the industry.

I strongly urge your attendance and active participation in the meeting, the discussions and the conferences. Many of us who have visited in foreign countries have been extended the same kind of courtesies and exchange of information which we propose to extend to our visitors. Let us make their stay in this country informative and useful. Let us absorb from them all of the valuable information possible.

The Institute publishes no formal "Proceedings." It is suggested that the E.E.I. BULLETIN be preserved as a Convention record. Extra copies of this issue are available. Quantity discounts will be given companies desiring to purchase extra copies for distribution to employees.

American Enterprise and the Electric Utilities

By Harper Sibley

President, Chamber of Commerce of the United States

An address before the Second General Session of the Fourth Annual Convention, Edison Electric Institute, St. Louis, Mo., June 2, 1936

IT is a distinction that I am happy to acknowledge to be asked to address the representatives of an industry, such as yours, which has been, and still is, so conspicuously identified with the progress of our country. It has, probably more than any other, changed the pattern of our national existence and supplied countless comforts and conveniences that would, otherwise, have been unattainable.

Its accomplishments, moreover, are not measured entirely by material progress. It has contributed in no small degree to the working out of administrative and other community problems which inevitably follow in the wake of so spectacular an advance—the adjustment of the social and political relationships which an advancing civilization requires. And those in your industry have cooperated most effectively with the National Chamber in attempting to find a satisfactory solution of the larger problems that concern all trade and industry.

The roster of our members who have rendered valuable service to this end is both long and distinguished—my predecessor, as president of the Chamber, Mr. Henry I. Harriman, of Boston; Mr. James F. Owens, of Oklahoma City; Major Thomas J. Strickler, of Kansas City, and more recently Mr. George S. Hawley, of Bridgeport, Conn. These are all members of our board. We also feel at liberty to impress into service, when occasion demands, Philip Gadsden, Matthew Sloan, Harry Abell and Lafayette Hanchett, who have been directors of the Chamber in earlier years.

An Ignored Standard

If your industry had to justify its existence only by the material advantages it has brought within almost universal reach, its place in the national economy would be secure. Unfortunately, in these days of world unrest, that standard is too often ignored. This is more or less true of all trade and industry. In the momentary embarrassment of adjusting ourselves to the

MR. SIBLEY

amazing progress we have made, there is a disposition to forget how far we have gone forward. The common achievement of creating a great power out of a weak and struggling nation in the course of one hundred and fifty years is obscured by the more pressing necessities of today. In our impatience, we overlook what has been done in concentrating our attention upon what is yet to be done. Our capacity to create new products and facilities has, only temporarily let us hope, outrun our capacity to use them to the greatest advantage. As usually happens in such cases, the mistake is made of trying to correct the discrepancy not by developing our capacity to use them but by throttling down or redirecting our capacity to make them. Often the effort is made to accomplish by decree what can be accomplished only by slow, persistent, hard work.

Many, perhaps most, of the problems which are now a matter of national concern involve this consideration. How far should we go in resorting to public authority to redirect and control the actions and activities of private individuals? To what extent, in other words, should we rely upon government to mold private business enterprise to national purposes? Those are not new questions. They are as old as government itself, and for the preservation up to this time of that balance between private initiative on the one hand, and collective control, on the other, the country is in large measure indebted to your industry. You have been at the forefront in adjusting those relationships which are implied by the phrase "public service".

I do not think that the answer to these perplexing questions is to be found in reverting to rigid, inelastic political and governmental standards that might have served admirably the purposes of an earlier day. Neither do I think it is to be found by resorting to untried theory and rash experiment. It would be improvident to cast aside all that has been achieved for something that has not been subjected to any practical test whatever, but it would be imprudent, in the same degree, not to adapt our business enterprise to the requirements of a changing order of existence. "Prophecy," as Mr. Justice Cardozo has observed, "is generally a poor substitute for experience." Business cannot soar on its wings. It must stick to the hard road of trial and error.

Changing Conditions

Your industry was one of the first to feel the impact of these changing conditions. It was one of the first to be called upon to find a practical answer to the question how far government should go in controlling private enterprise in order that it might serve the broadest public ends and permit of the freest exercise of the individual initiative which is mainly responsible for our national progress. In finding the answer you did not fly in the face of those fundamental economic and political principles which characterize what we call "the American system." You recognized the necessity of a certain degree of public control, because in your case the element of direct competition, upon which we rely to impose necessary restraints upon the individual, was lacking. You ac-

cepted the conclusion that that degree of control could best be achieved by state regulation. That type of public control is in harmony with the spirit of democratic American institutions.

The Chamber of Commerce of the United States has consistently supported the principle that regulation of electric and gas utilities should rest with the state and local authorities. It has advocated that state commissions should be given ample power to enable them to discharge efficiently their responsibility of conserving the public interest. While sounding a cautionary warning against excessive government interference, it has never asked for unbridled license for any business.

Political Management

That problem, which you were one of the first to encounter, now faces virtually all industries. The tendency to enlarge the scope of governmental control, and to limit proportionately the scope of individual initiative, has been accelerated by the distress that always accompanies economic depression. Government—the federal government—has not stopped with taking over regulatory functions properly belonging to the states. It has in some instances attempted to go far beyond this point by displacing private initiative and management and substituting for it political initiative and management. This is not only repugnant to traditional American practice and principle, but I am confident that time will prove that it is detrimental to the public whose interests it is intended to promote.

Not long ago there came to my desk a press release from one of the many government agencies now dealing, in one way or another, with the generation and use of electricity. In it I observed the phrase "utilities—public or private." This arrested my attention because it suggested a broader and more inclusive use of the term "utilities" than one is accustomed to hear nowadays. Most government agencies have been so absorbed in finding fault with private utilities that they have forgotten to inquire into the acts of your publicly-owned competitors. I trust that this chance phrase forecasts a fairer presentation of the utility picture to the public.

Ever since the light and power industry began, back in the 80's, we have had publicly-owned and privately-owned plants. For many years there was no conflict between them. Those were the days of isolated plants, before regionalization, integration or even interconnection had been dreamed of. Then there came a period of rapid scientific development and expansion. Steam turbines, high voltage transmission and, of course, the wide application of electric power to commerce and industry changed the whole aspect of the utility situation. And now the industry faces the alleged experiment of resorting to public ownership to test the efficiency of private ownership with a distinct threat to the continued existence of the latter.

Your industry is the guinea pig for this hazardous experiment, but other types of industry could not blink the implications of it. If the entrance of government into the field of producing and distributing electric power could be justified in principle, it would require no stretch of conscience to project it into other fields of business. For this reason, what happens to you is of momentous concern for all business.

In the case of the public utilities this experiment cannot be justly labelled a competitive test of efficiency. Extended, it becomes a war of extinction, as deadly in its effects as that which would be waged if one army were equipped with artillery and machine guns and the other with bows and arrows. To spend billions of dollars of public money, to set up federal authorities all over the country to dictate power rates, to subsidize states, cities, counties and districts can hardly be said to be an impartial way of determining whether government management is more capable than private management. The issue of such a conflict, in the long run, will not determine which is the better, but how long the one can survive.

How far the power of government should be invoked to serve our national purposes, and, at the same time, give full play to individual resourcefulness is not altogether a constitutional question. It is also a practical question, to be considered in the light of traditional American principles and in the light of prevailing conditions. The Constitution lays down broad precepts as a guide to national conduct, but we cannot rely upon these alone to keep us in the straight road. They must be sustained and applied by an enlightened and prudent public opinion. Within the scope of these precepts there are many fateful decisions to be made. There is room for acting wisely or unwisely without doing violence to them. The primary consideration, after all, is not to determine points of constitutional law, but to arrive at wise courses of action, to avoid crippling or destroying the industrial resourcefulness upon which we rely to meet our material needs.

The principle of state regulation of industrial enterprise has been established not only because it is in conformity with our constitutional pattern of government but also because it is the most effective way of achieving our economic purposes in a far-flung country such as this. The state regulating bodies deal with very practical matters of direct concern locally to the citizens to whom they are responsible.

The average citizen is not so much cost-minded as he is price-minded. If the price is not right, there will be complaint—at least there will be dissatisfaction. This is true in every line of business. In the competitive industries the buyer who believes prices are too high can resort to competing suppliers. In the utility business—power and light—there are, to be sure, competitive sources of supply outside the centralized electric current field. I cannot believe that it is necessary or desirable, however, to have a direct competitive regime within the industry.

In the case of the public utilities the states have set up these public bodies, whose members are either elected by the public or appointed by elected officials, primarily for the purpose of determining what is, at a given time, the proper (or reasonable) cost of good public service. Is this not a workable formula for inspiring public confidence and answering, to the satisfaction of the public, questions arising in the public mind as to price and service? I mean, is not this function of the state commissions one to be upheld and supported, rather than passively accepted? Is there not an opportunity to build public confidence in the proper regulation of public service?

The Best Insurance

Public knowledge and understanding of cost, impartially established, is the best insurance against public acceptance of unproved attacks on an industry. The fact that the federal government itself is attempting to demonstrate what prices and costs should be, vouches for the importance which I attach to public understanding of the cost of public service.

Even if we were to concede that it is all very well for those who have the public treasury behind them to experiment at public expense with economic

ideas regarding the relation between consumptive demand and price, I as yet am unable to see any practicable application of the results of such experiments. Utility management is not free to make use of the invested savings of the public in the same sense that government is free to use the taxes it collects from its citizens. If your business is like other business in which I have had experience, you must be progressive in research, as responsive as possible in extending your services, but at the same time conservative in your use of funds. You must render an accounting. You must, by trial and error, feel your way into new areas of development. You cannot play "follow the leader" by plunging blindly into venturesome changes, whether in the nature of price reductions or any other modification of policies, because you are answerable to your investors as well as to your consumers. The former is a kind of responsibility of which government knows nothing.

If the taxpayers of the country are willing to see their money spent for social experiments with electric power, they have that privilege, but in any such experimenting it seems that those conducting the experiment and appraising the results should not be only persons "who profess a belief in the feasibility and wisdom" of it, but persons who have an equally high regard for precision of measurement.

On the public ownership side, I would like to make a further comment regarding municipal plants. Only occasionally do we find any state regulation of municipal plants. Only occasionally do we find municipalities applying accounting methods to their utility operations that are comparable to the accounting practices imposed upon regulated private utilities. One who advocates public ownership may say that so long as a city represents only its own citizens and serves only its own citizens, it can run its business just as it pleases, provided the citizens are satisfied. Under such circumstances, it seems to me that unless that city elects to conduct its utility business according to the rules imposed upon private industry, its records and accomplishments are without value for yardstick purposes.

There are those in this country who honestly believe that we can substitute the political checks of public ownership for the economic checks of private ownership. With them we disagree. It is highly significant, however, that on both sides of this issue there is a constantly growing recognition of one important fact: public enterprise and private enterprise cannot long exist side by side.

Political bell ringing, roseate prophecies and visionary experiment will not take the place of actual achievement and will not satisfy the resolute courage and discriminating understanding of the individual citizen which are the bed rock upon which our American system is based.

Constitutional checks upon the undue encroachment of federal government, not only upon the states but upon the rights of the people of the states, can be imposed by judicial tribunals. Every day more light is being shed upon these limitations and their applicability to current conditions. On May 18, for example, in the Coal Case, the Supreme Court of the United States made an enlightening statement regarding the place of the states in our framework of government. It said:

"The determination of the Framers' Convention and the ratifying conventions to preserve complete and unimpaired state self-government in all matters not committed to the general government is one of the plainest facts which emerges from the history of their deliberations. And adherence to that determination is incumbent equally upon the federal government and states. State powers can neither be appropriated on the one hand nor abdicated on the other. As this Court said, 'the preservation of the States, and the maintenance of their governments, are as much within the design and care of the Constitution as the preservation of the Union and the maintenance of the National government. The Constitution, in all its provisions, looks to an indestructible Union, composed of indestructible States.' Every journey to a forbidden end begins with the first step; and the danger of such a step by the federal government in the direction of taking over the powers of the States is that the end of the journey may find the States so despoiled of their powers, or—what may amount to the same thing—so relieved of the responsibilities which possession of powers necessarily enjoins, as to reduce them to little more than geographical subdivisions of the national domain. It is safe to say that if, when the Constitution was under consideration, it had been thought that any such danger lurked behind its plain words, it would never have been ratified."

And, regarding the exercise of federal power under the commerce clause of the Constitution, it observed:

"In exercising the authority conferred by this clause of the Constitution, Congress is powerless to regulate anything that is not commerce, as it is powerless to do anything about commerce which is not regulation."

The Great Concern of the Public

These illuminating and forceful declarations may do much to bring us back to a true course, after wandering about in untrodden fields of political experiment. But they alone will not completely check the disintegrating forces which threaten our economic accomplishment. Government control of industry, I repeat, is not merely a constitutional question: it is also a practical question. The great concern of the public is to have an economic order which will afford them the greatest possible measure of benefit.

It is not enough, I would emphasize, for business to justify itself in the light of constitutional precepts. It must also justify itself in the service it renders. I believe that is the true spirit of American enterprise. Conversely, the projecting of government into business enterprise is not to be condemned solely on the ground that it is defiance of constitutional restraints, but likewise on the ground that it would defeat the very purposes at which it is aimed by curtailing, rather than increasing, the benefits which the public derives from a system of privately managed business enterprises.

American enterprise can well point to the amazing things it has done in the past, the swift pace of progress it has set for every other country in the world. In business, as in mathematics, each advance simplifies old processes and opens the door to new accomplishments. We have reason for confidence in the future power of American enterprise, under our American system, to make continuing great contributions to the economic life of this country. It will be necessary to show what can be done, and to demonstrate that here lies the most trustworthy course for the future. Political bell ringing, roseate prophecies and visionary experiment will not take the place of actual achievement and will not satisfy the resolute courage and discriminating understanding of the individual citizen which are the bed rock upon which our American system is based.

Present Day Financing for Utilities

By C. W. Kellogg

Chairman of the Board, Engineers Public Service Company, New York, N. Y.

An Address before the Third General Session of the Fourth Annual Convention of the Edison Electric Institute, St. Louis, Mo., June 3rd, 1936

THIS subject having been ably and exhaustively treated in papers before this body in past years, this present discussion will be confined largely to the developments of recent years and to comments as to the future.

Present Situation

It should be stated at the outset that the arrival of the Great Depression found the finances of the electric industry as a whole in sound condition. As this condition had been built up over a long series of years, it reflects well-deserved credit upon the financial conservatism which has marked the growth of the industry. The combined balance sheet of all commercial electric light and power companies (operating companies) for the year 1932 reported by the U. S. Census (which reflected fundamental conditions as of the beginning of the depression), very much condensed, showed the following:

CONDENSED BALANCE SHEET, DEC. 31, 1932

COMMERCIAL ELECTRIC LIGHT AND POWER COMPANIES (OPERATING COMPANIES ONLY)
(U. S. Census)

Assets			Liabilities	
Fixed Capital:	Electric....	$12,124,807,425	Stocks	$ 6,935,848,539 (b)
	Other	2,245,613,167 (a)	Long Term Debt....	6,678,761,901
	Total	$14,370,420,592	Net Advances	70,917,811
Investments		950,159,898	Reserves	1,381,566,874
Net Current Assets		301,755,757	Net Surplus	988,593,956
Unamortized Debt Discount		377,943,409		
Miscellaneous Net Debits...		55,409,425		
		$16,055,689,081		$16,055,689,081

(a) This includes:

Electric Railways	$ 367,048,585
Gas Properties	1,388,140,091
All Other Utilities	490,424,491
	$2,245,613,167

(b) Not divided in census report between preferred and common stock. Recent study indicates approximate division about as follows:

Preferred Stock	2,500,000,000
Common Stock	4,440,000,000
	$6,940,000,000

The same 1932 census report shows that the combined net income of $892,500,000 represented a return of 5¾% on the gross investment, fixed and liquid, and 6¼% on the net investment, after deducting reserves. Interest and amortization on funded and floating debt averaged 5¼%, dividends on stocks averaged slightly over 7% or a combined return on all securities of about 6.2%. These figures indicate a sane balance between the desire of the consumer on the one hand for the cheapest possible financing, and the necessity on the other hand to offer a rate of return such as to attract new capital to the use of the public.

Still further condensing, the total property, fixed and liquid, less reserves, amounted to $14,251,000,000 and was represented by only $13,686,000,000 of stocks, funded debt and advances. Of this total of securities, $6,679,000,000, or somewhat under 49%, was funded debt. The importance of this conservative debt ratio to the investor and to the consumer can hardly be overstressed. Borrowing such a proportion of capital as can be safely done is presumably in the interest of the consumer, on account of producing the lowest over-all cost of money, but excessive borrowing hurts investor and consumer alike. A very simple calculation will show that increasing the funded debt ratio from 50% to 60% requires a 20% higher total rate of return on property value in order to make the bonds saleable in each case on an equal basis. The industry has served the country well, therefore, in the building up and maintaining such a sound financial structure for the public service.

Since the depression the aspect of financing (that is the raising of capital) by the electric utilities has been radically different from that prevailing during the previous period. Through 1930 the history of the electric industry, due to the continual growth of the business, had been at all times characterized by the problem of obtaining the $5 or more of capital required on the average to earn $1 of gross receipts. After 1930 the growth in earnings largely ceased, so that such plant extensions as have been required since then could be provided for almost entirely by current reserves. This change is clearly shown by a few basic figures. In the eight years from 1923 to 1930 both inclusive, which cover approximately the period of post-war prosperity, the electric utilities expended for construction an average of $830,000,000 a year. During the same period the amount available for construction from retirement reserves and other surplus funds averaged about $205,000,000 per year. Hence during that period the difference, of about $625,000,000 a year, had to be raised by the sale of securities.

Omitting 1931 as a transition year, the last four years, 1932 to 1935, both inclusive, find the earlier normal conditions reversed. The total annual construction expenses of the industry averaged $186,000,000 for these years, while the amounts available from reserves and other surplus earnings averaged $256,000,000 per year. The difference of $70,000,000 per year was probably applied largely to the reduction of debt.

It is worth pointing out here that the decrease in construction expenditures during the last four years has not meant the development of a "power shortage," as has been maintained by those who seek a plausible excuse for pushing a program of Federal Government development of water power. The following figures for the entire electric industry speak for themselves: at the end

of 1929 the total generating capacity of the industry, exclusive of Federal Government projects, was 28,267,000 kilowatts and the output generated in that year was 90,277,000 kwhr. At the end of 1935 the total generating capacity was 33,446,000 kw and the output that year was 92,328,000,000 kwhr. Furthermore, although the installed generating capacity thus gained over 5,000,000 kw during the period in question, the revenue from consumers was about 1% less in 1935 than in 1929.

While the last four years have not required any substantial amount of new capital to be raised by the electric companies through the sale of securities for extensions to physical property, yet there has had to be a considerable amount of activity in the refunding of bond issues which matured during the period. In the early part of the period in question these refundings were in many cases accomplished only with great difficulty and at relatively high interest cost. Bond yields in 1932, for example, were higher (except for 1920) than in any year since the seventies of the last century.

The continuation of the depression, however, involving the piling up of investment funds on the one hand and the drying up of demand for such funds on the other, has produced a transformation in money market conditions really unparalleled in the history of this country. Within two or three years bond yields went from practically the highest point in sixty years to the lowest level in our entire financial history.

An interesting measure of the degree of stability of the electric industry in the face of depression conditions is furnished by some figures recently compiled by Dr. Dorau as to receiverships during the years 1931 to 1935 both inclusive. The total cost to the investor of electric utility securities, both operating and holding companies, in receivership during the period in question was about 5⅔% of the fixed capital in the industry, and the loss to the investor about 4⅔% of such capital. This compares with 21.7% in the case of steam railroads and 37.5% in the case of foreign securities outstanding Dec. 31, 1935. A comprehensive study of real estate securities during the period mentioned shows 61.7% of them in default. Since the holding companies have been charged with being the chief offenders in the alleged financial delinquency of electric utilities, it is proper to point out that the losses through receivership to investors in operating companies were nearly half the total of such losses, the loss through holding company securities thus representing but 2½% of the total fixed capital in the industry.

The Present Money Market

The present money market is, compared to any previous condition in the past, a most unusual and interesting phenomenon. As a measure of the extent of reduction in interest rates for investment funds, I have analyzed bond prices of nine of the highest grade bonds of operating electric utilities which apparently were not artificially affected by call price. For the seven years ending 1934, the average yield of these bonds at their market prices was 4.89% and the average deviation from this mean during the seven year period was but 0.13, showing an extraordinary stability through the depression. Bonds of the same companies, after refunding, averaged in 1935 and 1936 (through April) to yield 3.54%, a reduction of 27.6% from the previous period, compared to an average variation of but 2.66% in the earlier period. Recent offerings of utility preferred stocks for calling and refunding earlier issues bearing higher dividend rates, while smaller in face amount than bonds, show fully as great a decrease in yield as was cited for bonds.

This radical change in conditions contains implications which the Industry must consider most carefully. In view of the not yet forgotten generalities which were broadcast in 1928 and 1929, I disclaim any idea that the change represents a "new era," but it is at least a new condition. It appears to be a natural result of the law of supply and demand. On the one hand, there is continued pressure for the investment of the people's savings by the great reservoirs of capital like the life insurance companies and by individuals, and, on the other hand, due to business depression, practically no demand for funds for plant investment. It would be natural to suppose that money will continue cheap until the demand for new capital is restored by renewed business expansion and that when normal business growth returns interest rates also will tend to return to normal.

The dearth of need for new capital could not be better demonstrated than by the experience of the utility bond market in the recent past. In the 14 months ending April 1936, $1,510,000,000 of utility bonds have been sold — an amount equal to about a quarter of the entire funded debt of these companies. Yet out of this huge total only $15,000,000, or about 1%, represented new capital, all the rest being merely the refunding at a lower rate of interest of previously existing debt.

The effect of this decreased interest charge on such a large proportion of the utility capital may be (to the extent it affects the total cost of capital) to cause regulatory commissions to lower the rate of return they will allow on utility property. The process thus involved is to take from the capital class and give to the electric consumer, not by fiat but through the operation of economic law. In this connection it should be pointed out that the savings from refinancing are never as large as they appear on their face. In every case bonds or preferred stock have to be called at a premium, sometimes a very substantial one, and, in the case of bonds, the income tax on the increased net resulting from lower interest charges eats up a part of the saving. Furthermore, increased rates for taxation in future years may offset the entire saving from refinancing.

Government Competition

Up to the time of the New Deal Government, competition was not a factor of general financial importance to the electric industry. While municipal ownership had from time to time in the industry's history appeared as somewhat of a menace, yet experience with city operation had not on the whole proved satisfactory and the number of municipal plants had been dwindling. The only advantage which even theoretically a municipal plant could have over one privately financed was the lower cost of money raised on municipal credit (since the tax saving was really only a tax reallocation), and as the credit position of the utilities improved, even this advantage ceased in most cases to exist. Experience furthermore showed on the whole that the effect of political control in lowered efficiency more than offset even the theoretical advantages.

The advent of TVA and PWA have introduced entirely new features into Government competition, which, if they are to become permanent policies of our country, may well give cause for concern to utility investors. In the case of TVA a major part of the investment is allocated to something else than power. Through the last fiscal year TVA's construction charges of $48,487,500 were allocated $3,142,500, or about 6½%, to electricity and the other 93½% to things the taxpayer donated. The most

recent New Deal proposal, for a Mississippi Valley Authority, eliminates interest in computing charges for power. The PWA has broadcast an offer to any and all cities to donate 45% of the cost to any city that wants to compete with its local utility company.

The public policy involved in such accounting methods of the TVA and in the handouts of the PWA are of course outright subsidies, from the taxpayers as a whole to the people in certain restricted areas. They represent not ordinary economic commercial competition but direct strong-arm interference with normal economic conditions in the specific sections chosen for such largesse. Where they occur they may produce serious financial results for the utilities involved. That this is no idle guess is indicated by the fact that in the Commonwealth & Southern system recent price quotations of the 6% preferred stocks of its six principal subsidiaries showed an average of 105.2 for those outside TVA territory and 70 for those within that area.

We can only hope that in time, as the depression passes, a more sane and balanced policy of Government activity will emerge.

Securities Act of 1933

One of the radical changes in regard to financing which recent years have brought forth is the Securities Act of 1933 and the Securities and Exchange Act of 1934. Prior to the amendment by the latter of some of the personal liability provisions of the former, the Act at first appeared to be so strict as to be likely to make financing in all but exceptional cases well nigh impossible. The two difficulties which seemed insurmountable were how to get a director to assume such crushing personal liability as the original Act provided, and how investment bankers could safely make future commitments of a length commensurate with the time required to prepare and file a registration statement.

The first of these difficulties has been measurably solved by the amendments to the original Act, which allow directors to rely on statements of engineers, accountants and other experts, and the second by commission ruling permitting bankers to delay their commitment to buy securities to within three days of the effective date of the registration statement.

The expense and delay incident to registration under the Securities Act have no doubt acted as deterrents to financing but my opinion is that on the whole the Act is for the best. This opinion is concurred in by many of the larger investors and the investment advisory services. The rigid requirements as to full and complete information called for by the Registration Statement often serve as a desirable check even for the management itself and such a document once prepared becomes a permanent record for all time, one that requires merely to be brought up to date from time to time in future as additional financing is undertaken.

The better a security really is, the more it is helped by detailed disclosure. Indeed I know of at least one case where, but for the completeness of the registration statement and prospectus, a certain bond would sell much lower today than it actually does. If the completeness of the registration statement hurts the price and standing of a security that is proof that the disclosure was necessary for the protection of the investing public.

The time required for preparing a registration statement and subsequently waiting twenty days for it to take effect, may in some instances cause a market to be lost. On the other hand this is not a normal condition and is healthier than the hectic rush to catch some fancied market which accompanied many past offerings and no doubt caused insufficiently complete study by the bankers—with the investing public paying in the end. I believe our companies, with full knowledge of the Act's time requirements, should be able to anticipate financing demands adequately in the future.

Of the 78 utility bond issues sold in the 14-month period ending in April, 1936, 19 were sold direct to large investors without any general public offering. This was done partly no doubt in order to save bankers' commissions but principally to avoid the expense and director liability involved in registration under the Securities Act. These 19 issues comprised, however, only 13% of the total amount sold during the period. In the case of very small issues, where marketability would be at a minimum and the relative cost of registration high, such direct sales are no doubt justified, but for important issues it is believed that for the future market, if for no other reason, registration is desirable.

I have attempted to assemble figures regarding the cost of registration under the Act but they depend so much on the special conditions surrounding each individual case that any general statement must be subject to substantial variation in any specific situation. An approximate formula of cost would be a flat charge of $25,000, plus ¾% for the first $10,000,000 face value, ½% for the second $10,000,000 and ¼% for all excess over $20,000,000. Below two or three million in size the cost of registration might be prohibitive. One of the practical suggestions that has been made to improve the workability of the Act is to simplify the registration requirements or to omit the Registration Statement as such and have the Prospectus take its place, supporting exhibits being filed with the Commission. It has been estimated that 25 to 30% of the cost of registration might be saved in this manner.

As an offset to this, it should be noted that the percentage charged by investment bankers, the so-called "swing," is much lower now than it was ten years or more ago, probably due in large measure to the fact that most of the recent sales were for refunding. For the $1,280,000,000 of bonds sold by electric utilities through bankers in the fourteen-month period ending April, 1936, the average total swing charged by the bankers was but 2.15 points, which was less than rates prevailing ten years ago by much more than the cost of registration under the Securities Act.

The Holding Company

I have reserved until the last the general situation which the holding companies represent because it is the most essential part of the financial picture of the utilities.

In my earlier remarks I commented on the conservatism and soundness of the electric utilities' financial structure and stressed the importance to both the investor and the consumer of having the debt ratio down to 50% of the investment. But who has created and who will maintain this condition so essential to financial health? Certainly not the bondholder. He is simply a money lender who puts his money out on the best security he can obtain. Not the banker. He is simply a merchant who buys and sells; and the product must be made salable by someone else before he can afford to touch it. The only one who can perform this essential act, without which the whole structure falls, is the stockholder. It is true that a part of the equity cushion for making the bonds ride smoothly can be and is furnished by the preferred stockholder but he too is merely a money lender of

the second degree, who gets compensated by a higher yield for his more risky part in the job of financing. But both these classes rest squarely on the investment of the common stockholder, who takes the entire risk and is therefore the real source of financial life and health for the utilities. Furthermore, on account of the inability to sell substantial amounts of preferred stock due to the relatively limited market for such securities, the common stock as a whole has been obliged to furnish about 64% of the equity base for the bonds of the electric utilities. There is some reason to doubt that preferred stocks will sell as freely in the future as they have in the past and if the Holding Company Act is upheld by the courts, preferred stocks will be ruled out entirely, thus placing 100% of the bonds equity burden on the common stock.

The foregoing is true for any corporate organization which has need for capital funds but the reason it is of such transcendent importance to the utilities, compared to any other line of business activity, is inherent in the nature of the utility business. The last U. S. Census of manufacturers, analyzing all the important manufacturing industries of the country, showed that on the average they have 71c of plant investment for each dollar of annual gross revenue. In the case of the electric utilities, this figure varies as between steam and hydro companies and with other conditions, but on the average, they require at least $5 of plant for each dollar of annual gross revenue—seven times as much as the average industrial enterprise. This high investment ratio is one of the fundamental factors that makes the utilities a natural monopoly since investors would not dare to risk so much capital on a competitive venture, and has logically led to public regulation for the protection of investors and consumers.

The utility, by this commission regulation, is limited to just enough return to attract new capital, so that everything it gets by way of net earnings should go to its bond or stockholders. Hence the only funds from operation which it has for plant expenditures (save those foregone by the stockholders) are the accruals to its retirement reserves, an amount which, with 10% growth per annum, would furnish about a fifth of the year's plant requirements.

This is the reason why in times of normal growth, for an electric utility the need for new capital is not an occasional requirement but a hardy perennial.

It might seem pointless to have restated as above what you all know so well, if it had not been in the past so often overlooked or not realized, and if it had not been the one reason why, if holding companies had not existed before, something to perform the same financial function that they perform for the operating companies would have had to be discovered and developed.

What was the life financial history of the operating electric utility companies before the holding companies stepped in and built up their equity base? Outside of the few large cities, some local banker, manufacturer or merchant started an electric plant, just as he would any other new industry. He then discovered what a capital devourer such an institution was. Sometimes he put in a lot of his own capital; more often the plant was simply starved for capital and poor service resulted. In most cases it was impossible to make a successful stock offering because the marketability was so small.

Then came the holding company, which by the size of a combination of properties was large and diversified enough to raise this essential equity money from its own credit by the public sale of its own securities. Of course the holding companies did much more than this, their principal services being: to get electricity out into hamlets which but for their activity would have had none; to improve design, operating methods and economy; to assist in marketing the senior securities of the operating companies, and the like. But their absolutely essential role was to raise the common stock money which most isolated properties could not do but had to have.

From 1923 to 1930, both inclusive, the huge sum of $6,640,000,000 was invested in the electric light and power business of the country; about one-half of its present vast property was assembled in those eight years. Without the holding companies furnishing at least a quarter of this great amount through the common stocks of the companies, this capital could not have been raised and many millions of the people now enjoying the blessings of electricity would be without it today.

Due to the abuse and criticism of various evils which have grown up with some holding companies (which I neither excuse nor condone but are beside the point in this discussion), this great epic of what they did that was truly essential and constructive in a financial way, has never been written. Here are some figures which I have assembled for this paper—

An analysis of the sources of funds for plant expenditures by the operating subsidiary companies of 13 principal holding companies for the years 1925 to 1930, both inclusive, shows:

Total Plant Expenditures $3,071,000,000 or 100%. This was raised as follows:

1. By Operating Companies		
(a) Through sale to the public of their own securities	$1,478,900,000	48.1%
(b) Through investment of appropriations to Retirement Reserve	530,900,000	17.3%
Total Operating Companies	$2,009,800,000	65.4%
2. By Holding Companies		
(a) Through sale to the public of their own securities	$ 794,100,000	25.9%
(b) Through net earnings withheld from common stock	267,100,000	8.7%
Total Holding Companies	$1,061,200,000	34.6%

Without this large and essential equity base of 34.6%, this huge investment program either could not have been financed at all or would have been financed at the price of destroying the soundness of the whole financial structure of the operating utilities affected.

In a word, the strong equity position in which the electric utilities on the average found themselves when depression descended upon the country was not chance, did not just happen—it was the result of long years of planning and foresight on the part of those who alone had the responsibility for keeping the operating utilities strong financially—principally the holding companies. It is significant to note in this connection that most of the failures of holding companies during the depression were in cases where such companies had failed to perform adequately their function of equity financing.

Government protagonists have attempted to draw invidious comparisons

(*Continued on Page 251*)

The Campaign to Destroy

By Frank T. Post

President, the Washington Water Power Company, Spokane, Wash.

An Address before the Fourth General Session of the Fourth Annual Convention of the Edison Electric Institute, St. Louis, Mo., June 3, 1936

ABOUT a year ago I heard President Roosevelt say in one of his radio speeches that everything that had been done during his administration and everything that was being done or in contemplation fitted in with and is a part of a well-considered plan. He did not define the plan. My mentality is unequal to the task of forming any satisfactory conclusion as to the character of this major and magic plan. However, it would seem that the Administration plan for the electric utility industry may be determined almost to a mathematical certainty. I purpose to assemble several steps, acts, and performances during the past three years of and by President Roosevelt and the inner circle of political favorites, and demonstrate that their plan and program is the strangulation and destruction of the privately owned electric utilities, for the purpose of bringing about public ownership and political operation as the ultimate goal.

MR. POST

The Tax Injustices

About three months ago and just before he started upon his vacation in foreign waters, President Roosevelt sent a message to Congress asking for the passage of a new tax bill which he asserted would raise additional revenue to the amount of about $600,000,000. In that message he proposed a fantastic method of extracting these millions from the people, which method he contended would be both painless and popular. One of the unique and interesting features thereof is the repeal of the existing income tax law so far as it applies to corporations, and the repeal of the capital stock tax law and of all other existing taxes, and substituting a graduated tax upon undistributed net earnings. I said that the new plan contemplated the repeal of all existing corporate taxes, but that statement is inaccurate because the President did not suggest the repeal of the discriminatory electric utility tax of 3 per cent of revenues received from the sale of electrical energy for domestic and commercial consumption. That discriminatory tax, under the plan, is not to be touched. The story of that tax law is instructive.

In 1932, for the purpose of raising more revenue, the Congress passed a law imposing a tax equivalent to 3 per cent of the amount paid for electrical energy for domestic and commercial consumption to be paid by the person paying for such electrical energy and to be collected by the vendor. And under that law it was immaterial whether the vendor of such electrical energy was a privately owned utility or a publicly owned utility. The tax was paid by the customer. The Government received under that law a considerable number of millions, about $3,500,000 per month.

In 1933, when the New Deal Congress, elected in November, 1932, began to function, this statute was amended by providing that the 3 per cent tax shall not be paid by the customer but be paid by the vendor when such vendor is a privately owned utility, but when such vendor is a city, town, county, power district, or other publicly owned utility there is no tax and the Government gets no money. The amendment states, "None of the provisions of this Section shall apply to publicly owned electric and power plants." Under this amendment passed by the New Deal Congress the Treasury of the United States gets less money than under the Act of 1932, to the extent of at least $3,000,000 per annum.

The legislation passed in 1933 and just passed in 1936 creates a condition of unjust discrimination against the privately owned utilities in two respects: One, the electric utilities are compelled to pay the same taxes as all other corporations and an additional tax amounting to the aggregate to about $35,000,000 per annum. Two, the cities, power districts, and other publicly owned and politically operated utilities, which are either potential or actual competitors of the privately owned utilities, are exempted from this additional and discriminatory tax and in fact they pay no tax of any kind or character to the Federal Government. This exemption from taxation, of course, constitutes a subsidy for the politically operated utilities. This 3 per cent tax, if imposed upon the politically operated utilities, would produce a considerable sum of money much needed by the United States Treasury. The reason for this discrimination is patent, because there can be no reason except the desire of the Administration to penalize the privately owned electric utilities and subsidize and encourage public ownership.

The MVA and the TVA

I will now refer to some of the Acts of Congress passed or recently introduced relating to the building of dams and power plants and the generation and sale of electric energy. I will refer specifically to only two of these bills, as by virtue of their authorship they may be considered typical.

It will be conceded, I think, that Senator Norris and Senator Bone may be referred to properly and respectfully as High Priests of the Public Ownership Cult. It will be remembered that in the campaign of 1932 Mr. Roosevelt, making a campaign speech in Seattle, took Mr. Bone to his bosom and con-

gratulated him on leaving the Socialist Party and joining the New Deal. It will also be remembered that during that campaign Mr. Roosevelt stated that he saw eye to eye with Senator Norris and that their ideas and ideals were in perfect harmony. So I may assume that Senate Bill 3524, introduced by Senator Norris and known as the Mississippi Valley Authority bill, has the approval of those in high command as such may be critically analyzed. That bill purports to create a supergovernment over all the states in that great empire comprising about 1,180,000 square miles, the waters of which, if undiverted, flow into the Mississippi River, with the exception of the Ohio River Valley, which by Section 21 is turned over to the tender mercies of the Tennessee Valley Authority.

The objects of this Act as stated therein are: (1) Flood control; (2) improved navigation; (3) irrigation; (4) restoration of water levels; (5) protect fertility of the soil; and last, but not least, (6) generation, transmission, distribution and sale of electricity. The business of this Authority will be conducted by a board of three directors appointed by the President. The corporation will be financed by the United States Treasury. The corporation will have power to construct an unlimited number of dams in the Mississippi River and its tributaries and unite all power installations into one or more systems. The cost of the dams and other improvements shall be allocated by the Board of Directors and charged to: (1) flood control; (2) navigation; (3) irrigation; and (4) power development, and paid by the taxpayers of the Nation. The allocation findings made by the Board, when approved by the President, shall be final. The Board is authorized to sell the electric energy not used in its operations and for operation of locks and other works, to states, counties, municipalities, corporations, partnerships or individuals, giving preference to states, counties, municipalities and cooperative organizations of citizens or farmers, provided that all contracts made with private companies or individuals for the sale of power which will be resold to the public shall contain a provision authorizing the Board to cancel such contract upon one year's notice if the Board shall conclude that it needs such power to supply the demands of states, counties, and municipalities. The author, of course, knew that this provision about selling power to private companies or individuals, which might be resold, is a bit of humbug because, except for temporary power in case of great emergencies, no private utility would enter into a contract to purchase power for resale to the public when such contract could be canceled upon one year's notice. A private utility must at all hazards furnish firm and dependable electricity to its customers for light and power purposes. It cannot make an arrangement where it might be required to shut off the lights or shut down the motors because the owner of the generating units might cut off the supply in order to give power to somebody else. Manifestly no sane management would make any such contract, and the provision in this Act about selling power to private companies is not placed therein in good faith. It is political camouflage.

This bill and other similar bills introduced in Congress do not provide for the payment of any percentage of revenue received from the sale of power, in lieu of taxes, to the United States Treasury. Nor do they provide for the payment of any kind of a tax, or anything in lieu of a tax, to any state, county, city, town or school district. Nor do they provide that cities, towns and other political subdivisions which may be purchasers of this power for resale to the public shall pay taxes, or anything in lieu of taxes, to either the Federal Government or to any state, county, city, town, or school district. These properties and all the revenues from these properties are to be tax exempt.

The Tennessee Valley Authority Act does make a political gesture by providing for a very small tax. The Alabama Power Company recently stated that if the TVA were required to pay taxes on the same basis as that company it would have to pay 270 times as much as it did pay in 1935.

Supergovernment Over 23 States

I have already stated that the cost of these dams and power plants must be allocated and charged to flood control, navigation, irrigation, and power development. Such allocation for power may be 25 per cent of such cost or it may be less than that. There is no provision in this bill that the rates to be charged for such power shall be fair, just and reasonable, or that the Board shall undertake to obtain from the sale of power revenues which shall be sufficient to pay any rate of return whatsoever upon the amount allocated to power. In other words, the Board may sell the power generated in these plants below the cost thereof or at any price it sees fit to charge.

The Mississippi Valley Authority as defined in this bill creates and imposes a supergovernment over twenty-three states and parts of states. The rivers which are tributaries of the Mississippi River in this territory are at least 170 in number without considering any small streams. The Board has authority to construct one or more power dams in each of said rivers.

Section 21 of this bill provides, "The Ohio River and its tributaries and the Ohio River Valley shall hereafter be under the control and supervision of the Tennessee Valley Authority and said river and its tributaries and said Valley shall hereafter be included under and governed by the Tennessee Valley Authority." The Ohio River Valley includes nine states and parts of states. And the rivers which are tributaries of the Ohio River are at least 27 in number.

The Tennessee Valley Authority "governs," to use the language of the Act, all or parts of at least seven states. The exact territory is uncertain at this time. The territory to be "governed" by the TVA and MVA, quoting the word used in Section 21, comprises 43 per cent of all the land in the continental United States, excluding Alaska and the main mountain systems. Undoubtedly it is the plan of those high in command to have Congress pass the Mississippi Valley bill, S. 3524, and to construct several hundred dams and power plants in the Mississippi and Ohio Rivers and the rivers tributary thereto, at the cost of several billions of dollars, if they can find any way to get the money. A Committee or Commission appointed by the President has recommended the building of 500 dams. Of necessity a part of the program is to have the Federal Government donate and loan several additional billions of dollars to cities, towns, and other municipalities throughout that great empire to be used in building municipal systems which will purchase the power thus generated.

It is, of course, self-evident that these politically operated systems, exempt from taxation of any kind, subsidized by the Federal Government as to the cost of construction of both power plants, and transmission lines and distribution systems, and without any restraints as to the charges made for electric energy, will

afford a condition of competition that cannot be met by the privately owned utilities, which pay in taxes from 15 to 20 per cent of their gross revenue and which are compelled by law and state regulation to charge rates that are fair, just and reasonable, without discrimination, and whose capital investment consists of the entire cost of its power plants and transmission and distribution systems (about $5,000,000,000), and not 55 per cent of their cost, and which are limited to a fair rate of return upon the fair value of their property used and useful in the public service. It is evident that if this bill shall be passed and the taxpayers are adequately "milked," and the money is appropriated for these Authorities, that the result will be bankruptcy for many of the privately owned utilities now operating in this great empire and giving efficient service at reasonable rates. Such results not only will be bankruptcy for the corporations but enormous losses to the two million of investors therein—men, women and children, as well as depositors of savings banks and policyholders of life insurance companies.

Senator Bone's bill (S4178 introduced February 24, 1936) relates to Bonneville and is a little more frank than Senator Norris' bill in that it does not contain any weasel words or humbug about selling the electric energy to privately owned utilities. Under Senator Bone's bill none of the power generated at Bonneville Power Plant can be sold under any terms or conditions to any privately owned utility or to any industry whatever. It must be sold to states, counties, and other political subdivisions of the state, and if they fail to buy it, it will not be sold at all.

Visualize, if you can, that great superstate to be created by the Mississippi Valley Authority Act, comprising about one-third of the United States, superimposed upon twenty-three states in whole or in part. The Mississippi Valley Authority Act provides that the three Directors appointed by the President shall undertake to bring about the maximum amount of flood control and irrigation, the maximum benefit of navigation, the maximum generation of electric power, and issue edicts dictating what they may consider the proper use of marginal lands and the proper method of reforestation, and may do and order all things which in their opinion will be for "the economic and social well-being of the people." As under this proposed statute, if valid, the triumvirate appointed by the President would have power, without any Congressional definition or limitation, to do and dictate whatever the President or the triumvirate might think proper for "the economic and social well-being" of their subjects, and the other things just mentioned, there would be created a petty monarchy ruled over by men with autocratic power. No longer would there be within that territory a government by the people. State laws would be subject to the edicts of these potentates. As this bill is the brain child of Senator Norris, this supergovernment should bear his name—The Norris Empire.

The Activities of Mr. Ickes

I now ring down the curtain on Act II of this National Tragedy and ring it up for Act III. Mr. Harold L. Ickes is a man of great versatility. He is Secretary of the Interior and has been presented by the President with some 25 other jobs—bureau, commission and commitee jobs. Within the last three years he has written and published two books and several magazine articles and made numerous political speeches and also functioned in the distribution of several thousand million dollars as Administrator of Public Works. It must be conceded that he is the President's favorite Cabinet Officer.

A paragraph in the preface of his latest book, dated May 15, 1935, is illuminating. It reads as follows:

"As the one entrusted by the President with the grave responsibility of administering this huge total sum of 3 billion, 700 million dollars, I want to say that whatever success has attended that administration has been due to the guidance and inspiration of the President. His has been the vision that has never dimmed. Franklin D. Roosevelt will be written down in history not only as the world's greatest builder; he will likewise be known for all time to come as the greatest planner. I never cease to marvel at the understanding grasp that the President at all times has had of the most obscure and detailed items in connection with a vast program that already has comprehended almost 20,000 projects in practically every county in the United States and which has reached also into our outlying possessions."

Mr. Ickes is a public ownership fanatic. He admits it not only in his writing but also in his donations and distributions of other people's money. His Chief was well advised as to Mr. Ickes' attitude in January, 1934. At the request of the President the Edison Electric Institute prepared a code for the electrical industry under the National Industrial Recovery Act and it was presented to Hugh S. Johnson, National Recovery Administrator, for discussion in January, 1934, at Washington. The Convention lasted three days. Mr. Ickes did not belong to any organization that had anything to do with this code. In fact it was none of his official business. But he sent the chief lawyer for the Interior Department to make a bitter, venomous speech against privately owned electric utilities, all and several, operating companies, and holding companies. This lawyer said nothing about the code and was rebuked by Donald Richberg for making a stump speech.

Ever since the passage of the National Industrial Recovery Act, Mr. Ickes has been putting out press releases inviting cities and towns to build and operate electric power systems and come to him for the money. And to encourage municipal ownership he has offered to let them have taxpayers' money ample and sufficient for the building of such plants, and that from 30 per cent to 45 per cent should be an out and out gift and the remainder a loan on easy terms at 4 per cent interest. Some of them grabbed at the bait and now he states he has been met with lawsuits, some 59 in number, brought by the pesky utility companies whose property he is seeking to destroy. In his eyes it is quite reprehensible for a utility company to defend its property against unlawful attacks when such attack is being directed by the favorite Cabinet Officer. There is said to be such a thing as being drunk with power and that the effect on the intellect is worse than that of alcoholic intoxication.

Why these numerous lawsuits? The reason is not simply because Mr. Ickes' conduct is contrary to law. The people are getting accustomed to New Deal performances which are unlawful. The real reason is that this undertaking of Mr. Ickes is immoral and dishonest. Let me be more specific. A city or town is induced to take from Mr. Ickes the entire cost of constructing a competing electric plant or system without obligation to return to the Government more than 55 per cent of the moneys received with interest at 4 per cent per annum, as the remainder, or 45 per cent, is an outright gift of taxpayers' money to the city. The city is prohibited from purchasing the existing privately owned system, or any part of it. The new system parallels the existing system. With the the 45 per cent subsidy, the low rate of interest for the balance, the fact that

the new system will pay no taxes (Federal or State), civic pride, ballyhoo and boycott, the city will be enabled to get most of the business and the privately owned system will be valueless. Poles and wire without earnings have no value. This is destruction by finesse, but nevertheless destruction. When a person has incurred royal disfavor it makes little difference to him whether he gets a stiletto in his back or slow poison in his coffee. Would the situation be any different in morals if Mr. Ickes were to hire an army of unemployed to tear down the existing poles, wires and transformers and erect other poles and otherwise replace the system with property bought with taxpayers' money? This would be destruction by direct action but no more effective than destruction by finesse. If he were to adopt the second method it would be called political vandalism, or something worse, and, of course, would be a crime at common law and under statutory law as well. In morals the two methods of destruction are identical. If there is any legal difference between the two methods of property destruction, which I do not believe, possibly Secretary Wallace's famous expression, "legalized stealing," would be applicable.

Why the Desire to Destroy Property?

Why this desire to destroy valuable property which is useful and is being efficiently used in the public interest—property which is owned by several million of our people? For quite some months after he became Administrator of Public Works, Mr. Ickes said in speeches and press releases that he was interested in establishing rates that are socially desirable, whatever that may mean, and that he would consider a promise by the applicant city to lower rates an important factor when he was determining whether or not to give any money to such city. But a few months ago he had a change of heart. To illustrate I will refer to the case of The Washington Water Power Company against the City of Coeur d'Alene, Idaho, and Mr. Ickes. In parenthesis I may say that this case is ended. We have a final decree on the merits enjoining the City from taking any moneys from the PWA for building the proposed electric system, and enjoining Mr. Ickes from giving any moneys to the City. The defendants took an appeal and later made a motion to remand, to enable them to change their answer and also their statements of fact as to the reason for the donation and loan. Shortly afterwards and upon learning that we were about to file a petition of certiorari to forthwith take the case from the Court of Appeals to the Supreme Court of the United States, they dismissed their appeal because they did not want the Justices of the Supreme Court to read the record in our case. Mr. Ickes so stated in a letter to the City, written last March. In his motion to remand he states that the existing allotment is canceled, and in deciding to make a new allotment he gave no consideration to our rates, to the rates which the City might charge, or to whether lower rates are desirable, but only whether the loan and grant complied with the provision of Title II of the N.I.R.A. In other words, whether these donations and loans to cities and towns for municipal ownership and destruction of existing systems would materially aid in reducing the number of unemployed. He does not frankly so state, but that is the inference. The patent fact is that the Ickes performances do not decrease the number of unemployed but have an opposite effect.

The Wheeler-Rayburn bill with its death sentence, the Government building of numerous dams and power plants and the threat of more dams here and there and everywhere, the financing of municipal ownership with taxpayers' money, discriminatory taxes, and the outspoken New Deal antagonism to the existing utilities has had the normal and to be expected effect on the industry, namely, to stop, look and listen before spending any moneys in new plants or in betterments and improvements. In other words, if the industry could have been assured of a square deal from the Government the answer of the utilities would have been the spending of several billion dollars during the last two years in plants, improvements and betterments, and many thousands of the unemployed would have had jobs.

The real reason for Mr. Ickes giving money to municipalities cannot be unemployment relief. His reason may be illustrated by an actual occurrence. About four years ago the Public Utilities Commission of Idaho had an informal hearing about Coeur d'Alene matters, at which there were present the Mayor and the City Council of Coeur d'Alene, and certain representatives of our company. We suggested a change in the residential rate schedule which would reduce the monthly residential bills of about 75 per cent of the customers. The Chairman of the Commission asked the representatives of the City to express their views about our proposal, when two members of the City Government said that they were not interested in rates but only interested in municipal ownership. The germ known as bacillus municipalist usually attacks the brain. The victim cries out, "I am not interested in costs, rates or service. What I want is that the utilities shall be managed by the politicians."

It is but fair to Mr. Ickes to state that apparently he has not been acting contrary to the wishes of the President. Such fact is evidenced by the preface of the Ickes book, already quoted, and also by the loan and grant made to Iowa City. Through Frank Walker the President sent his compliments to the Mayor of that city telling him "of the pleasure I have had in approving an allotment for your municipal power plant, made on the recommendation of Hon. Harold L. Ickes, Public Works Administrator." It may be a mere coincidence that Iowa City is located in the congressional district of Congressman Eicher who so viciously attacked the utilities in the debate about the death sentence section in the Wheeler-Rayburn Bill.

Act IV of the National Tragedy

The curtain goes down and arises again for Act IV of the National Tragedy.

In January, 1935, the Legal Department of the PWA prepared scores of bills for enactment by the legislatures of the several states. The Administrator, who had several billions of other people's money to spend, sent a dozen or more of these bills to the Governors of the forty-eight states. Most of such legislatures were then in session. The purpose of some of these bills was to improve the machinery of the state governments so that moneys could be advanced to the states with promptness and dispatch. The purpose of at least three bills was to foster and encourage public ownership and political operation of the electric light and power business. Time will not permit a reference to more than one of such bills. Doubtless the most scandalous bill is the one having the short title of State Rural Electrification Authority Act. This bill purports to create a corporation which would be an agency of the state. Section 3 of the bill provides that the corporation shall be a municipal corporation in perpetuity with power of perpetual succession, and that the name thereof shall be ———

(*Continued on Page 252*)

Rate Reductions

By W. G. Vincent

Vice-President and Executive Engineer, Pacific Gas and Electric Co., San Francisco, Cal.

An Address before the First General Session of the Fourth Annual Convention of the Edison Electric Institute, St. Louis, Mo., June 1, 1936

THE electrical industry has every reason to be proud of its record. Its accomplishments in technical, economic, industrial and social fields have provided themes for many lucid writers and fluent speakers and require no elaboration here. These accomplishments have not resulted from chance or fortuitous circumstance, but are products of research, of experimentation, and of the functioning of the economic law. We have asked for neither favor nor subsidy. We claim no special consideration and ask no immunities. But when others appear and attempt to take credit to themselves or claim to have discovered in foreign climes the things which we by the sweat of our brows and the use of the midnight kilowatt-hours have designed and perfected, it is time to file an indignant protest.

Let us be modest, however, and let a distinguished British editor present it. Lord Rothermere, Publisher of the London Daily Mail, during a visit to the United States, wrote and published in his paper of December 15, 1925, an article entitled "Through Power to Prosperity" in which he said in part:

"In the modern world the most important of all raw materials is power. It is the most important because it is the most universally required.

"The economic welfare of the United States is based more than anything upon the fact that she has 29,000,000 hp. of electrical power established in her factories—a force that is estimated as the equivalent of 290,000,000 human workers.

"Each great center of population in the United States receives its power from a single producing organization, which is generally linked, in its turn, with similar enterprises in the same range of territory, for the elimination of wasteful duplication and the reduction of overhead charges."

Referring to the high living standard of American artisans, Lord Rothermere said:

"The explanation of their prosperity can be almost entirely compressed into two words—cheap power.

"These benefits, and greater ones which lie in the future for America, are due to the energy and vision with which a few leaders have grasped and solved the problem of power supply on a national scale.

MR. VINCENT

"So great a task as the reconstruction of our power supply is not, however, to be undertaken without the very best advice and guidance. We must avail ourselves of the experience of experts who have carried such projects to success in other countries. The model we should take is the United States, whose power organization has proved its efficiency."

In 1926 a delegation, headed by Sir William Mackensie and appointed by the Minister of Labor of the British Empire, spent three months in the United States and Canada and reported in similar vein.

Later Sir Andrew Duncan, Chairman of England's Central Electricity Board, and Sir Archibald Page, General Manager and Chief Engineer of the English "grid" system, visited the United States, and came all the way to California, to study transmission and distribution methods.

In 1934 the Director and Chief Engineer of the TVA Electric Program were sent to England to study power transmission and distribution systems developed there. Truly a "prophet is not without honor save in his own country."

The entire history of the development of the electrical industry has been observed by many persons who are still actively at work. Among the most notable of its achievements has been the continuous downward trend of the charges made for electric service.

The extent of these reductions may be briefly recounted. As shown by figures published by the Edison Electric Institute, the average rate paid for domestic service in the United States has been as follows:

1882—25	cents	per	Kwh.
1900—17	"	"	"
1910— 9.62	"	"	"
1920— 7.45	"	"	"
1925— 7.3	"	"	"
1930— 6.03	"	"	"
1935— 5.03	"	"	"

From an analysis just completed of the bills for domestic service in the 51 cities in the United States used by the Department of Labor in compiling its cost of living data, I find that the average bill, weighted according to population, for 25, 100 and 250 kwh per month was as of January 1 of each year,

	Average Bill For		
	25 Kwh	*100 Kwh*	*250 Kwh*
1906	$2.77	$10.29	$24.87
1911	2.43	8.66	21.34
1916	2.08	6.93	16.28
1921	1.99	6.31	14.61
1926	1.80	5.58	12.73
1931	1.65	4.94	10.60
1936	1.50	4.17	7.79

Beginning with the year 1926 we have a record of the sales and revenues of the electrical industry in the United States divided into seven classifications. Had the 1926 average rate for each class of service still been in effect from 1927 to 1935 inclusive, the electricity used during that period would have cost the public $2,021,839,000 more than was actually paid. That the public was not required to pay this larger amount for its electric service was due to two factors, namely, rate reductions made since 1926, and the fact that practically all electric schedules are so designed that increased use automatically receives a lower rate.

The amount of $2,021,839,000 to which I have referred is made up for

the different classifications of service as follows:

Domestic	$1,204,864,000
Commercial Light and Power, Small	447,595,000
Commercial Light and Power, Large	313,718,000
All Other Classes	55,662,000
	$2,021,839,000

Expressed as percentages of the corresponding amounts actually paid by each class, these savings are:

Domestic	20.9%
Commercial Light and Power, Small	9.4%
Commercial Light and Power, Large	6.5%
All Other	4.0%
Total	12.1%

The amount accruing to domestic users, of $1,204,864,000, is made up of savings due to rate reductions approximating $900,000,000 and savings due to the added use being billed on the lower blocks of the rate schedules approximating $305,000,000.

This is only part of the story. The extent to which the public has benefited cannot be measured by the dollars saved through reduced charges. The comforts enjoyed, the conveniences made available, the relief from manual labor, and the significance of all these in the economic and cultural progress of the country are essentially a part of the picture.

Let us consider for a moment the factors which influence rate trends. So much has been said recently upon this subject that one can hardly see the forest for the trees. The fundamentals are hidden in dense mists of verbiage, but to people living with this business there are general principles which are as certain and inexorable as are the laws of the physical sciences.

Early in the infancy of the electric industry these fundamentals were understood. Prior to 1900 Hopkinson and Wright, in England, and Greene, in the United States, enounced the principles of the economy of the business, and the basic truths which they discovered are unchallenged today. They saw clearly the difference between the electric industry and the mercantile establishment, not only in the character of their commodities but also in the vastly different financial structure required for their operation.

Rates in those days moved rapidly downward as the principles of the business were disseminated among the operators. And this was not an effect of governmental regulation. No such regulation existed. Reduced rates were thus not the cause of the industry's growth but the necessary condition of its survival in a competitive field. Hence rates reacted solely to economic forces; not to regulatory compulsion, nor to the philanthropy of the operators.

Thus, research and invention almost infinitely enlarged the field of usefulness but changed none of the essential characteristics of the enterprise or its dependence upon the solution of the economic problems of production and distribution. Load and diversity factors took on increasing importance. In the meantime the lighting load grew apace and with it the necessity for further scrutiny of rate schedules. For it was discovered that there was a point at which the minimum lighting needs of the consumer were satisfied; that beyond that point the value of additional lighting service begins to decrease, and that therefore he is willing to pay less and less because of this declining marginal utility. Promotional rate forms recognized this condition, and again we see behind the rate revisions the motive force of economic principles.

The development of the power business entrained new problems; not new in the sense that they modified the general economics of the industry; but new only by reason of their greater complexity and the exaction of higher analysis for the correct application of the basic principles. They inducted into the language of the industry the terms demand factor, diversity factor, capacity factor and others. They led to the higher conception of power economics which foreshadowed the interlocking of great systems.

In the power field competition with other sources of energy drove the price of electricity downward, and accelerated the trend of technological advancement. Prospects of great profit provided the stimulus in the search for ever higher efficiencies and the consequent lower costs of production. In a word, rate reductions responded to the profit urge, abetted by four general conditions, viz. first, competition, which furnished a yardstick for the measurement of values; second, increase in size and diversity of load which resulted in cheaper utilization of existing facilities; third, technologic advances which brought forth more efficient apparatus for the generation, transmission and distribution of electricity; and fourth, consolidation of properties. The first of these is common to all business. The second, third and fourth, while shared in a sense by all industry, are particularly important in the electrical industry. All are fundamental economic forces, and their effect is readily discernible in the downward trend of rates alike prior to regulation and since its coming.

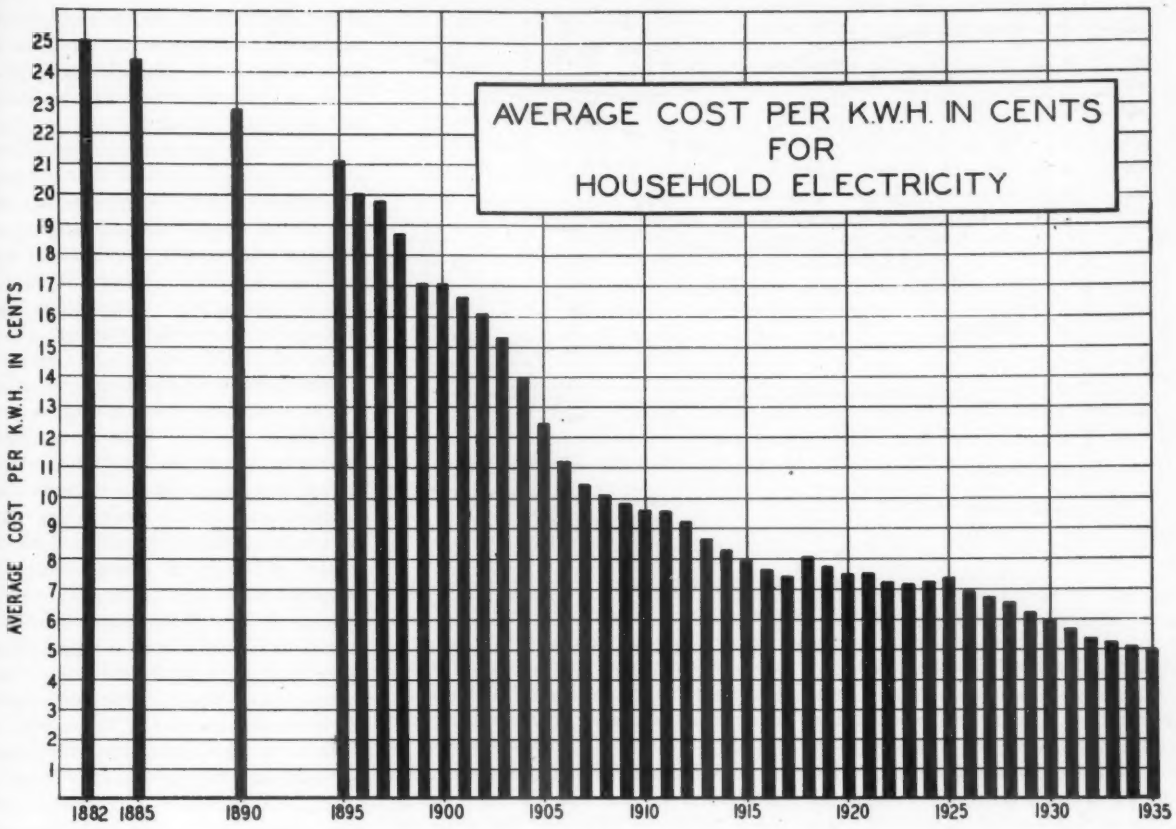
This does not imply that the regulatory commissions are not desirable. The commissions, we know, exercise a beneficial function—a necessary one, in view of the size and position of the industry today. Over-zealous management sometimes needs some restraining influences.

There is also the desirability of levelling rates as between systems, where no reason exists for differentials. Public health and safety also require that certain uniform service standards be enforced. In sum, it may be said that the commission provides the industry with the check and balance system which is the essence of our form of government. Thus, the recent trend of electric rates reflects the shaping influence of two powerful forces, economic considerations tending to adjust the schedules to a consistency with the value of service to the user, while regulatory authority has been exerted to bring about an equalization of the charges irrespective of the value of the service.

These influences will continue to shape rates and rate policies in the future. To some extent they are contradictory and antagonistic, and in that condition lies danger which we must set our best efforts to avert. We have gained much from regulation. We can confidently assert that there is no business where the methods of charge for the commodity or service supplied has been subjected to more searching and careful analysis or where more varied methods have been given the acid test of practical application. By and large these methods and forms which have survived are fairer and more equitable to both buyer and seller than is the case in any other class of business enterprise.

All this seems elementary to us; and yet it leads inevitably to a conclusion which has, it appears, escaped the scrutiny of our critics. This conclusion is (and repetition of the statement seems to be quite warranted) that electric rates are fixed by economic law whose operation is as much beyond the sphere of private control as it is from the influence of political interference. To assert otherwise is to controvert the evidence of the industry's history.

But let us summarize very briefly the status of the electric industry at the end



of 1932. Revenues were falling off and decline in sales and earnings meant little if any savings in expenses. It was basically an industry with very high ratio of invested capital to gross earnings and it had been expanding rapidly, making large investments for anticipated load. Even during 1930 and 1931, in response to the appeal of President Hoover it carried on its construction program in an effort to maintain employment. In the five years from 1927 to 1932 its investments in plants and properties had increased 36.5% and the ratio of invested capital to gross earnings was nearly six to one. Taxes had increased 35.7% in the same five years, and the end was not yet. Rates in prosperous times had been held down to a low return so that it had not been permitted to build up reserves to carry it over a period of adversity. The rate structure was not within its own control. In many sections the ownership of properties had recently been combined in the interest of more economical operation but their complete integration had not been accomplished, and last but not least there were a few in our midst who, in their enthusiasm, had oversold the prospect of their properties to the investing public and the entire industry was to suffer from the general opprobrium brought on by their acts.

All of the above difficulties are ones which are either inherent in the business or brought on by the action of the industry or individuals within its ranks. In addition to these troubles, however, the industry was to be subjected to certain attacks from without.

1. The investigation of the Federal Trade Commission of holding companies which had been going on for several years was continued, accompanied by wide publicity being given to everything unfavorable to the industry.

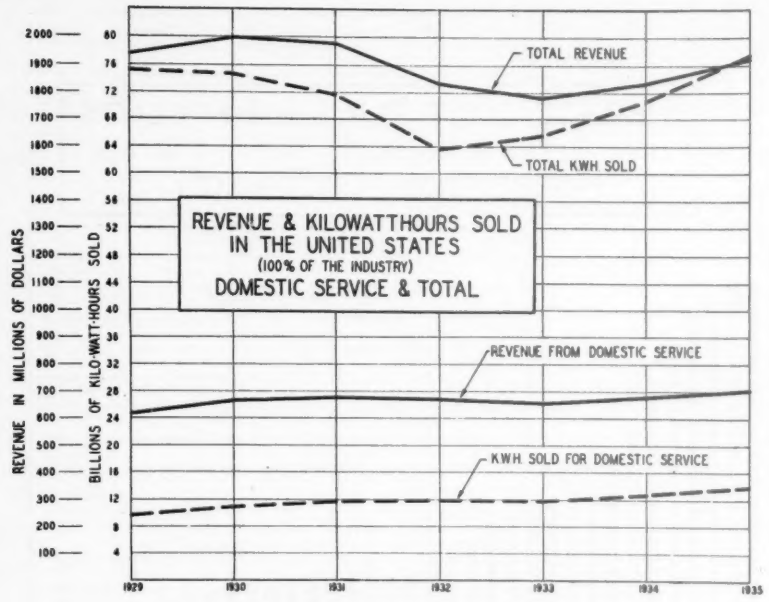
2. On May 1, 1936, expenditures totaling $439,200,000 had been authorized on some twelve large Federal projects involving power, the ultimate cost of which will be many times this amount. (In no single case is the amount included in this $439,200,000 sufficient to complete the project.) The power developed by these projects will in general be either directly or indirectly competitive with privately owned electric companies.

3. The so-called holding company bill was initiated and finally passed.

4. The power of the Federal Power Commission was largely increased superimposing regulatory powers from Washington on top of those already possessed by State Commissions and it was given certain authority with reference to the establishment of interconnections of electric power systems.

5. Although quite inconsistent with the recognition of the economic advantages of "integrated regional systems" as expressed in the Public Utility Act of 1935, the return of the "days of the ox cart" is being encouraged by the Federal Government in the making of loans and grants in aid of construction for the establishment of independent publicly owned utilities to be, in many cases, competitive with existing utilities. Loans and grants have been made available to municipal and other public bodies for the purpose of establishing and enlarging electric systems in competition with existing utilities.

6. Along with other so-called big businesses the electric utilities were subjected to political criticisms and attacks as to their rates and practices so that the confidence of the public in these companies was greatly shaken and a feeling of distrust spread abroad. This feeling of criticism, suspicion and distrust manifested itself in a demand for lower elec-



tric rates. This demand was not confined to the areas of companies whose rates have not been recently reduced, but also was made on companies whose rates had been consistently reduced over a period of years, leading one to the very definite conclusion that an electric rate reduction is entirely forgotten by the public in not to exceed six months or a year.

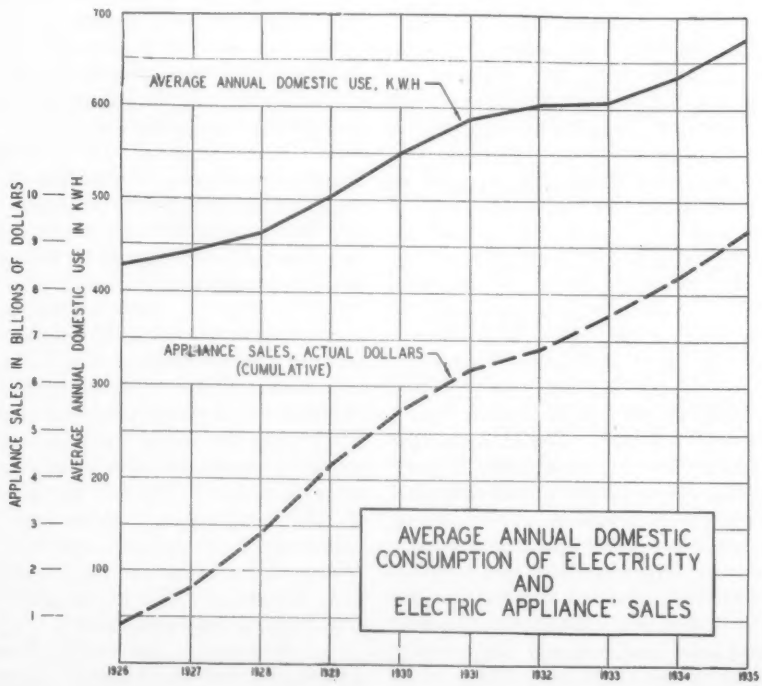
In 1932 the industry was certainly not in such an economic condition that rate reductions might reasonably be expected, except where such reductions would with reasonable certainty lead to increases in net operating revenues, as dividends had very generally been reduced, salaries had been cut and the working time of employees shortened.

The industry, however, not only maintained but increased its sales activities. It was encouraged to do this by the fact that although revenues from all other classes of business had declined, the revenue from the domestic class had continued to increase up to 1932. While there had been a falling off in the number of customers, there was a continued increase in sales and revenue per consumer. This situation and the increased buying of domestic electric appliances, the prices of which had been greatly reduced, was indeed very encouraging to the entire industry and stimulated the development of original and ingenious sales methods designed primarily to promote additional business without sacrificing present revenue. The result was that the domestic revenues and sales were practically constant through 1933 and then once more resumed their upward trend.

I have prepared a chart giving the total revenues and sales for the industry from 1929 to 1935 and the same information for the domestic classification which is extremely interesting, particularly when it is considered in relation to other charts which I have prepared giving the relation of the sales of domestic electric service to the sales of food, apparel and general merchandise, 1929 to 1933, expressed both in dollars and in volume of sales.

The trends indicated by these charts are convincing evidence that, regardless of what the critics were saying, the action of the public in increasing its use of our service clearly demonstrates that it did not feel that the domestic electric rates in general were unreasonably high, burdensome or restrictive of use.

During the past five years the reduction in personal income has been so great that the people have been compelled to make a re-examination of the importance or worth to them of the various commodities and services which they have been in the habit of buying. With the drastic shrinkage in income it became necessary to drop something out of the scale of living. This process of choice which the people were compelled to make because of the scarcity of income or purchasing power is the very essence of economic conduct. The value to them of various items must be judged by their retaining some and dropping others. When submitted to this test the economic conduct of domestic customers of electric service is conclusive proof that the value of that service to them is extremely high, in fact higher than most other things for which they

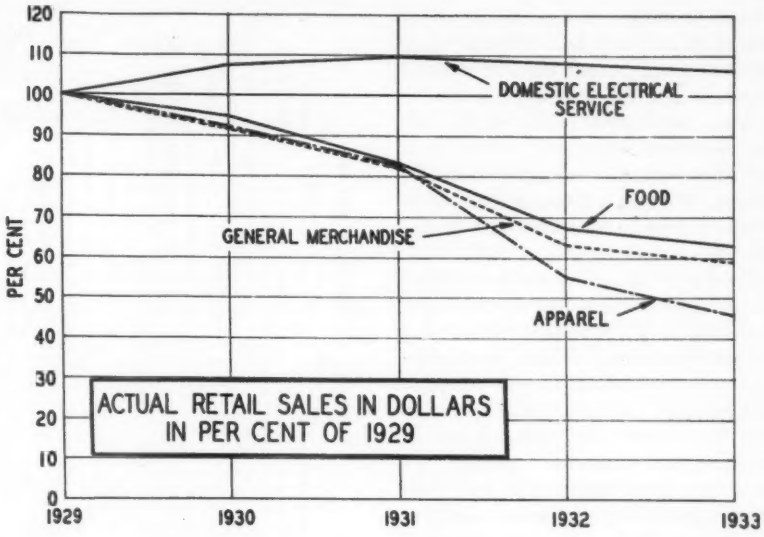


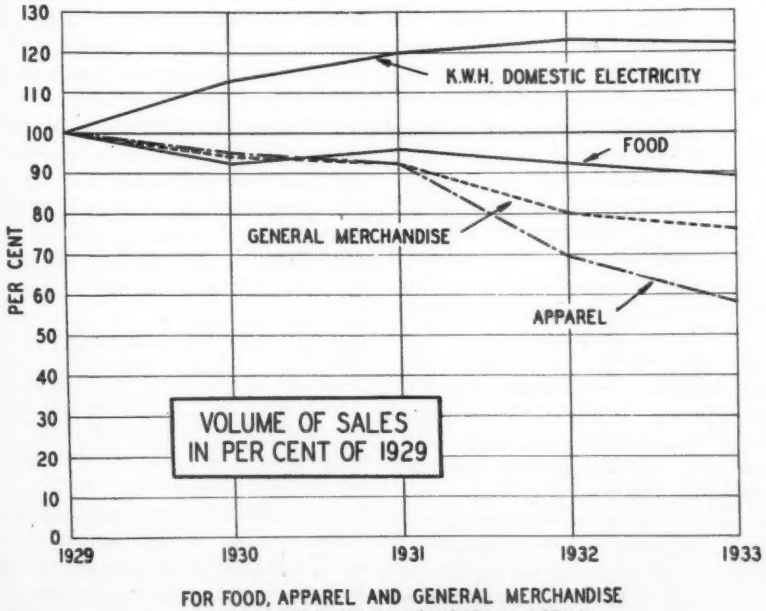
spend their income. They have increased their consumption of electricity for domestic use, increased their expenditures for that service, spent money for appliances so they could use more of that service, and at the same time have curtailed their purchases of other goods.

Let us pause for a moment and examine just what, on the average, this domestic electric bill amounts to, and consider what the purchaser receives in return for the money that he pays the utility company each month. Let us examine this domestic bill about which so much sleep is lost by the politician to try to find out the cause of all the shouting.

There are in this country some 21,000,000 domestic electric customers. (If you cannot find the cause of all the shouting in this statement, I believe you will search for it in vain in what is to follow.) These 21,000,000 customers last year used on the average 673 kwhr for which they paid $33.84, but as is well known this average is derived from a large number of small users and a smaller number of large users. In fact, about two-thirds of this entire number, or some 14,000,000 customers, none of whom used over 600 kwhr a year, used on an average about 300 kwhr a year or 25 kwhr a month.

The Federal Power Commission in its Rate Series No. 3 found the average bill for the entire country for a domestic use of 25 kwhr was $1.79, or approximately 6c a day. This use ordinarily covers lighting and operation of some small appliances such as toasters, vacuum cleaners, electric clocks, radios, bell ringing transformers, etc., so when we consider the amount of the charge which is about equal to the tax on a package of cigarettes, slightly in excess of the cost of a package of chewing gum, or about equal to the cost of a morning and evening paper, in relation to the value of the service rendered to the customer, it is difficult to see how anyone could consider the charge unreasonably high or in any way burdensome. Even if we consider the average bill of all domestic customers including the large consumers who have electric ranges, refrigerators, washing machines, water heaters, several radios and all the multitude of electric appliances which add innumerable conveniences to the modern home, we will find that the charge is not unreasonably high. Considering that on the average the domestic bill for all 21,000,000 customers last year averaged about 9c a day, or less than the cost of a shoe shine, the cost of laundering a shirt, the cost of a trip downtown and back whether by street-car or family automobile, it is impossible to see how anyone could question the fact that the domestic customer is getting his money's worth in full measure when he pays his electric bill.





FOR FOOD, APPAREL AND GENERAL MERCHANDISE VOLUME OBTAINED BY CORRECTING ACTUAL SALES TO 1929 PRICE LEVELS

Let us pass from the average bill to the total national bill for domestic electric service to see how that compares with certain expenditures made by the public for both necessities and luxuries.

The total domestic electric bill of the nation in 1935 was about $702,682,000, just about equal to the amount the American women spend in beauty shops, less than was spent in barber shops, less than the public spends for candy and about one-half the amount it spends to see moving pictures.

The increase in the domestic use had a stabilizing effect on the economic condition of the industry in a much greater proportion than the increase in kilowatt-hour sales because of the fact that these sales were made to the class paying the highest average rate, and even though the aditional use came on the lower block of the domestic schedule the revenues received per kilowatt-hour were greater than the revenue which had been

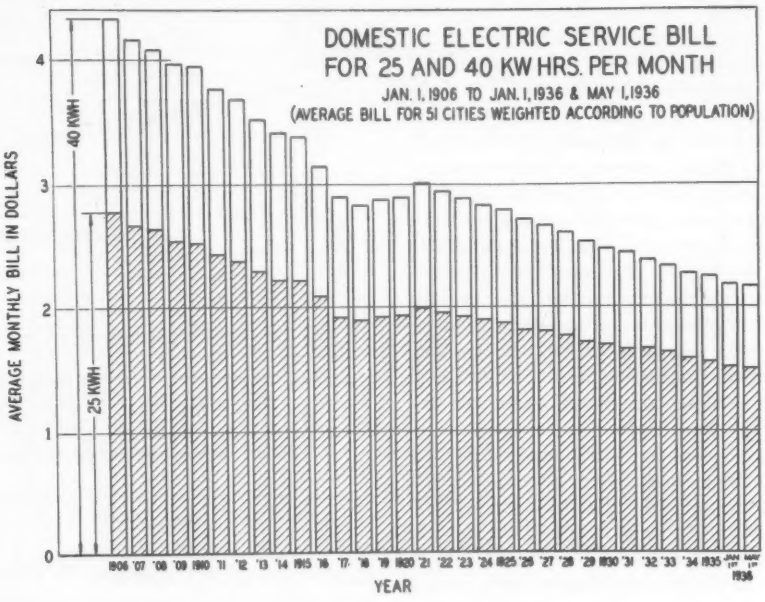
received from that part of the industrial load which had been lost. This development was an important factor in making it possible for the industry to resume its long established policy of making rate reductions when and where such reductions offered reasonable prospect of increasing the volume of sales without more than a temporary loss in net earnings.

There were other circumstances which also developed which played their part in making it possible for the industry to resume its former policy. Like every other business institution the industry had examined and re-examined its controllable expenses and instituted operating economies wherever possible. In many cases more economical and complete integration of properties supplying large areas had been accomplished. Some companies had used the opportunity presented to remodel plants. More recently the money market has made it possible to reduce fixed charges by refunding operations.

There have been some reductions made during the last few years which were not justified by the economic conditions but were the result of political pressure. Some of these may work out; in other cases, the former rates sooner or later will have to be restored, at least in part, or the investors will continue to sacrifice the return to which they are entitled.

The critics of the industry have told us repeatedly during recent years that if we would reduce our rates, we would increase our sales and profits. This has been the favored line of criticism for those outside the industry, and sometimes even those w i t h i n the industry have p r e s e n t e d the same argument, reaching this conclusion by a process of inductive reasoning, that is to say, by assuming that the accomplishments in certain special localities could be secured in other localities even though conditions are quite dissimilar. There are any number of specific instances which prove conclusively that any such generalization is absolutely unjustified. It is true that where a high use per consumer has been developed, a relatively low rate will usually be found in effect, but this is because of the fact that conditions in that particular locality m a d e the development of a high use per consumer possible. The two conditions were interrelated.

There are cases where a relatively small decrease in the rate when accompanied by suitable merchandising activity will produce a large increase in volume and an increase in gross revenue and even in net revenue. Because of success in a few instances, the industry's critics have jumped to the conclusion that the same thing could be done indiscriminately. They speak of a "hump" to be got over and of "breaking the log jam" as if all that were needed were a rate reduction to unloose such a flood of additional use that not only would the gross revenue be promptly restored, but that even the net position might be at least as good as before.

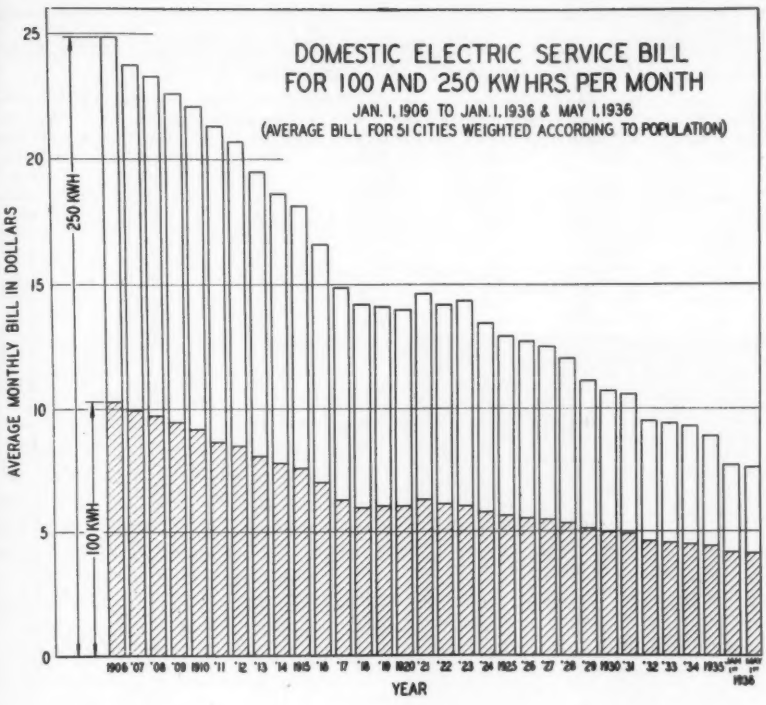

DOMESTIC ELECTRIC SERVICE BILL
FOR 25 AND 40 KW HRS. PER MONTH
JAN. 1, 1906 TO JAN. 1, 1936 & MAY 1, 1936
(AVERAGE BILL FOR 51 CITIES WEIGHTED ACCORDING TO POPULATION)
AVERAGE MONTHLY BILL IN DOLLARS
40 KWH
25 KWH
0
1
2
3
4
1906 '07 '08 '09 1910 '11 '12 '13 '14 1915 '16 '17 '18 '19 1920 '21 '22 '23 '24 1925 '26 '27 '28 '29 1930 '31 '32 '33 '34 1935 JAN 1ST MAY 1ST 1936
YEAR

This problem is not new to you. It is as old as the industry. The management has constantly sought ways of increasing use and in favorable situations has not hesitated to make rate reductions in anticipation—in fact sometimes even upon the mere hope—of increased use in sufficient volume to overcome the reduction, both as to gross and net, but it is obvious that such experimenting should never be done rashly, never by taking for granted anything which could be resolved in advance.

We must not, however, jump to the conclusion that a rate reduction in any case will pay for itself. The circumstances of each case must be carefully considered. In the domestic and especially in the heating and cooking field a most important consideration is the price at which competitive fuels are available. Unless the contemplated rate reduction can be made sufficient to compete with these fuels, after due allowance for the incidental advantages of electricity, it may be futile and little or no stimulation result. This is very likely to be the case in cities supplied with natural gas for domestic use.

In the City of Winnipeg, Canada, where the average domestic use is approaching 5,000 kwhr per year, published reports indicate that nearly 90 per cent of this use is for heating purposes in substitution for domestic fuels and thus the use for other purposes is little, if any, more than the average use for such purposes generally in the United States. In the City of Los Angeles, California, where the availability of natural gas restricts the use of electrical energy for heating purposes even at the very low electric rates which prevail in that city, the average domestic use is low.

An interesting sidelight on this problem may be had from my own company supplying central California. Natural gas competes in this territory with electricity for the domestic heating and cooking load in most all cities and towns and even in a part of the rural territory, but generally in the rural territory electricity has a clear field so far as gas is concerned. The resulting development of domestic electric use in the two kinds of territory is interesting. It should be said that the domestic electric rate schedules applicable in rural territory are higher than those applicable within the limits of incorporated places. For the year 1935 the average use per domestic customer in the incorporated territory served by Pacific Gas and Electric Company and affiliated companies


DOMESTIC ELECTRIC SERVICE BILL
FOR 100 AND 250 KW HRS. PER MONTH
JAN. 1, 1906 TO JAN. 1, 1936 & MAY 1, 1936
(AVERAGE BILL FOR 51 CITIES WEIGHTED ACCORDING TO POPULATION)
AVERAGE MONTHLY BILL IN DOLLARS
250 KWH
100 KWH
YEAR

was 663 kwhr whereas in the unincorporated territory it was 1113.

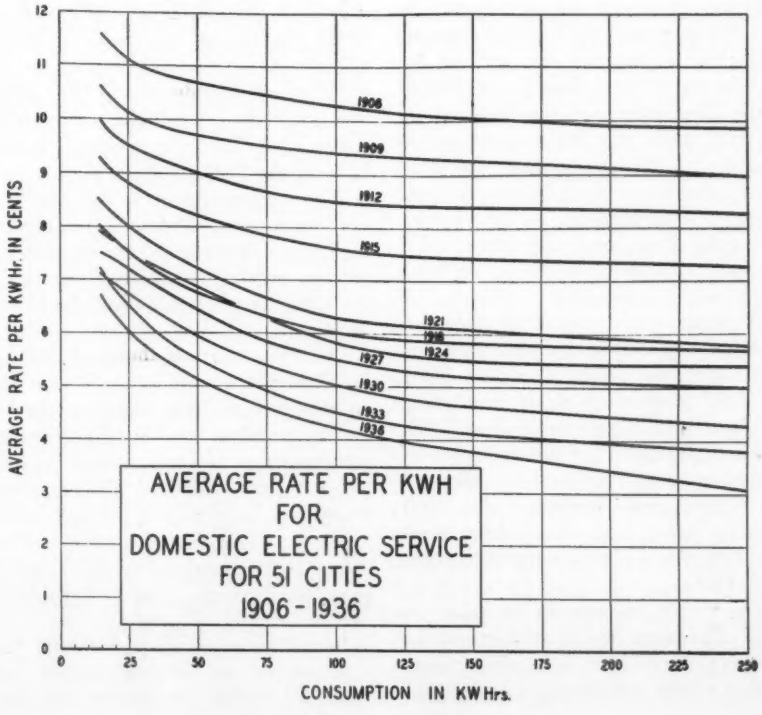
Another sidelight on this same matter: Natural gas was introduced into central California, replacing artificial gas, in 1930, and at the same time was extended into many towns where there had been no gas service before. It is interesting to note the effect of gas competition upon domestic electric use in these towns. For comparison we have taken eleven towns where natural gas was introduced in 1930 and eleven towns otherwise similar but without gas service. In the five years following 1930, the growth of domestic electric use per customer in these two groups of towns was as follows: For the towns having gas competition, a decrease of 15 per cent, and for similar towns without gas, an increase of 34 per cent. Electric rates applicable in all these towns were the same.

The statement that lower rates will increase sales is susceptible of at least two intepretations. I believe it is generally intended to imply that the present rates are such that customers feel constrained in the freedom with which they make use of their present facilities for using service and if rates were lower this restriction would be removed. It is with this implication that I take issue. It may have been true many years ago but I can find no evidence that it is so today. On the contrary, the record of how the public spent its money during the dark days of the depression, to which I have already referred, is conclusive evidence that electric rates, and I am speaking of domestic rates, are not burdensome or restrictive on the use of our service.

The other interpretation is, that if rates were reduced the public would be encouraged to use electric service for other purposes, that is to say that more people would purchase and use refrigerators, ranges, heaters, washing machines, etc. With this interpretation I agree to a certain extent, a rate reduction is a good selling point for appliances and equipment and certainly when a rate reduction is made the sales department should carry on an intensive campaign to try to recoup from John Smith not only the reduction which has been made to him but that made to Sam Brown. As a matter of fact, if John Smith has need of an electric refrigerator and has not bought one, the deterring factor has been his inability to purchase the refrigerator and not the added cost of the energy it would use in its operation.

If the earnings of a utility and its future prospects justify a general reduction of its rates, all well and good, a reduction should be made, and there is nothing more gratifying to the responsible executives of a utility than to be able to announce a rate reduction, but to make a rate reduction to all its customers merely in the hope that the John Smiths will buy refrigerators and other equipment in sufficient volume to offset the reductions made to all other customers is neither fair to the John Smiths nor sound business.

In making its electric rate survey of the nation as of January 1, 1935, the Federal Power Commission obtained a



WEIGHTED AVERAGE BILL AND WEIGHTED AVERAGE COST PER KWH. FOR DOMESTIC ELECTRIC SERVICE IN 51 CITIES OF THE UNITED STATES, JANUARY 1, 1906, TO JANUARY 1, 1936, AND MAY 1, 1936

	15 KWH.		25 KWH.		40 KWH		100 KWH.		250 KWH	
Year	Wt. Ave. Bill	Ave. Cost per Kwh. Cents	Wt. Ave. Bill	Ave. Cost per Kwh. Cents	Wt. Ave. Bill	Ave. Cost per Kwh. Cents	Wt. Ave. Bill	Ave. Cost per Kwh. Cents	Wt. Ave. Bill	Ave. Cost per Kwh. Cents
1906	1.74	11.6	2.77	11.1	4.31	10.8	10.29	10.3	24.87	9.9
1907	1.66	11.1	2.66	10.6	4.14	10.4	9.91	9.9	23.77	9.5
1908	1.64	10.9	2.62	10.5	4.06	10.2	9.70	9.7	23.31	9.3
1909	1.59	10.6	2.53	10.1	3.94	9.8	9.44	9.4	22.60	9.0
1910	1.58	10.5	2.52	10.1	3.93	10.0	9.17	9.2	22.12	8.8
1911	1.54	10.3	2.43	10.0	3.75	9.4	8.66	8.7	21.34	8.5
1912	1.50	10.0	2.38	9.5	3.67	9.2	8.47	8.5	20.73	8.3
1913	1.43	9.5	2.28	9.1	3.50	8.8	8.00	8.0	19.51	7.8
1914	1.41	9.4	2.22	8.9	3.40	8.5	7.71	7.7	18.62	7.4
1915	1.39	9.3	2.20	8.8	3.35	8.4	7.56	7.6	18.18	7.3
1916	1.32	8.8	2.08	8.3	3.13	7.8	6.93	6.9	16.28	6.5
1917	1.22	8.1	1.91	7.6	2.87	7.2	6.22	6.2	14.82	5.9
1918	1.20	8.0	1.87	7.5	2.81	7.0	5.99	6.0	14.17	5.7
1919	1.22	8.1	1.91	7.6	2.86	7.2	6.05	6.1	14.06	5.6
1920	1.23	8.2	1.92	7.7	2.87	7.2	6.02	6.0	13.99	5.6
1921	1.27	8.5	1.99	8.0	2.99	7.5	6.31	6.3	14.61	5.8
1922	1.24	8.3	1.95	7.8	2.93	7.3	6.12	6.1	14.16	5.7
1923	1.21	8.1	1.91	7.6	2.87	7.2	6.05	6.1	14.32	5.7
1924	1.18	7.9	1.88	7.5	2.82	7.1	5.80	5.8	13.40	5.4
1925	1.16	7.7	1.85	7.4	2.77	6.9	5.66	5.7	12.93	5.2
1926	1.14	7.6	1.80	7.2	2.70	6.8	5.58	5.6	12.73	5.1
1927	1.13	7.5	1.79	7.2	2.66	6.7	5.47	5.5	12.52	5.0
1928	1.10	7.3	1.75	7.0	2.60	6.5	5.33	5.3	12.06	4.8
1929	1.08	7.2	1.70	6.8	2.52	6.3	5.15	5.2	11.14	4.5
1930	1.07	7.1	1.68	6.7	2.46	6.2	4.99	5.0	10.74	4.3
1931	1.05	7.0	1.65	6.6	2.43	6.1	4.94	4.9	10.60	4.2
1932	1.10	7.3	1.66	6.6	2.37	5.9	4.62	4.6	9.58	3.8
1933	1.08	7.2	1.62	6.5	2.32	5.8	4.53	4.5	9.42	3.8
1934	1.05	7.0	1.57	6.3	2.26	5.7	4.48	4.5	9.32	3.7
1935	1.03	6.9	1.54	6.2	2.23	5.6	4.42	4.4	8.96	3.6
1936-Jan.	1.01	6.7	1.50	6.0	2.17	5.4	4.17	4.2	7.79	3.1
1936-May	1.00	6.7	1.49	6.0	2.16	5.4	4.15	4.2	7.73	3.1

record of the amounts charged in different localities for domestic use for various monthly consumptions under certain specifications. This information was published in its rate survey reports. In order to determine the trend of domestic rates over a long period I secured for each of the 51 cities listed by the United States Department of Labor in its survey of retail prices the amount charged in that city for the same monthly consumptions (domestic) used by the Federal Power Commission in its rate survey and under the same specifications, as of January 1 of each year from 1906 to 1936 inclusive and May 1, 1936.

A composite average bill for each monthly consumption for each year was then obtained, the averages being weighted proportionately to population.

The weighted average bills for 25, 40, 100 and 250 kwhr per month have been plotted and are shown on the accompanying charts, two showing the total amounts and a third the resulting average rate per kilowatt-hour for every third year.

The trends shown can be taken as truly representative of the trend in domestic electric rates in 51 cities representing a total population of 30,000,000 in 1930. (Three cities were omitted from 1906 to 1916 because of lack of data.)

A point of particular interest in these charts is the continuity of the down trend throughout the entire period of thirty years, spanning two major national crises, viz., the World War period and the recent great business depression.

An analysis of the weighted average bills for the 51 cities shows that:

The average domestic bill for each year for a use of 25 kwhr and over has been lower than the bill for the previous year in each of the thirty years except for a brief period following the World War.

Over the thirty-year period the bill for domestic service for each year has, on the average, been less than the bill for the previous year by the following percentages:

For	15 Kwhr	1.8%
"	25 "	2.0
"	40 "	2.3
"	100 "	3.0

For the past fifteen years, 1921 to 1936, the percentages are as follows:

For	15 Kwhr	1.5%
"	25 "	1.8
"	40 "	2.1
"	100 "	2.7

The effect of the World War with the resulting higher price levels is thus reflected in the less rapid decline in rates over the last fifteen years, as contrasted with the entire thirty-year period.

We may summarize the past and prospective future trend of electric rates somewhat as follows:

1. The earliest electric rates were designed to secure business which would be profitable.

2. The extension of service to other uses was generally attended by lower rates than applied to existing service.

3. The expansion of use in any class of service required lower rates than applied to existing use.

4. There has been incessant pressure to equalize rates by reduction to a common level of the lower schedules.

5. Regulation has tended towards affecting such an equalization, while economic influences have generally tended toward reductions in schedules that would expand sales.

6. There is every indication that the process which has been going on for fifty years will continue unless interfered with by influences beyond the control of the industry and outside of the sphere of economics.

A National Program for Prevention of Blindness and Conserving of Eyesight

By Lewis H. Carris

Managing Director, National Society for the Prevention of Blindness, New York, N. Y.

An Address before the Fourth General Session of the Fourth Annual Convention of the Edison Electric Institute, St. Louis, Mo., June 3, 1936

IN my trips about this country—and I have covered more than ten thousand miles through the South and West this past winter—I was forcefully impressed with the frequency with which I was met, on the outskirts of cities and towns, with the billboard slogan, "Better Light—Better Sight." To have the message of better sight brought to the attention of parents, teachers, industrialists, and the general lay public has long been the aim of the National Society for the Prevention of Blindness. Indeed, for 28 years the Society has sought to point out the possibilities of the prevention of blindness and of the conservation of sight.

You are doing an important piece of work in dramatizing through advertisements in newspapers and on billboards the importance of good eyesight in everyday living. The electric light industry has played an important role in making people in all walks of life aware of the part that efficient vision plays in almost every undertaking. Proper lighting contributes in no small measure to eye efficiency, eye comfort and the prevention of accidents. Your message must necessarily go to those who see. It cannot affect the 114,000 people in this country who live in darkness, nor can it alone save from the blindness those hundred thousand more who may lose their vision.

It may be that some of you have visited a school for the blind, a workshop for blind boys and girls, or a home for blind pensioners. You cannot have failed to be impressed with the tragedy of a life of darkness into which little or no light ever penetrates. You could not have marked the groping of little fingers for their toys or the quick sweep of the hand across a page of Braille without thanking God that this fate has not overtaken you or your loved ones. Electric light cannot brighten their lives, nor can it prevent this misfortune from befalling others.

The causes of blindness are more remote than the electric light bulb. They

MR. CARRIS

lie intimately in the very structure of our civilized life. Let me sketch briefly for you some of these causes.

A baby is born—and within a few hours swelling and inflammation affect the delicate eyes. Before that infant's eyes have learned to focus, before he has learned to know light from dark, he is condemned to lifelong blindness. Yet "babies' sore eyes"—ophthalmia neonatorum—is preventable. This infection that occurs at birth may be prevented by the simple precaution of instilling routinely into the eyes of every baby, at the moment of his birth, the protective drops of silver nitrate.

A young mother brings her little girl to a clinic because the child's eyes are inflamed, watery, sensitive to light. Examination and a blood test of both mother and child prove that potential blindness and undoubted visual handicap were transmitted—unknowingly, as in the majority of cases—from the mother to her child before its birth. Yet we know that the transmission of syphilis from mother to child is preventable when the expectant mother receives proper treatment in the period of gestation.

To another clinic comes a middle-aged man, a man still in his prime, ready to reap the rewards of his years of application. His sight is failing; he needs frequent changes of glasses; he often has headaches; he may see rings about a street light, or notice a blurring of vision. These symptomatic difficulties may indicate the presence of glaucoma, a disease of the eye that is increasingly being noted among people turning the corner into middle age. Medicine, proper treatment, proper living habits, sometimes operation, can usually check this cause of blindness that may give but a faint warning. Constant observation and care are weapons which often can stave off blindness for those who have glaucoma. As much as medicine and surgical help the older eye patient needs a sense of fellowship, understanding and cooperation; and physicians are learning to rely more and more upon the social service eye workers to give this human encouragement which is an important sight saver.

An adventurous lad of 10 is celebrating the Fourth of July. His last giant firecracker fails to explode. As he picks it up, the fuse ignites the gunpowder and both of his eyes are burned—burned to blindness. A workman in a machine shop takes a file to the emery wheel; a steel splinter penetrates his unprotected eye, so suddenly that the incident is almost painless. Not until a few hours later does pain drive him to a doctor or a hospital. After infection sets in, the sight of the eye is gone.

The National Society for the Prevention of Blindness, in cooperation with others, has been influential in reducing the incidence of blindness from some of these causes, notably, ophthalmia neonatorum, or babies' sore eyes. Thirty years ago an eye physician was asked to serve on a Special Commission to Investigate the Condition of the Blind, and he found, and voiced in the report of that Commission: "In the study of blindness

throughout the State of New York, as elsewhere, the members of your Commission have been profoundly impressed with the fact which has constantly forced itself upon their attention, that a large part of blindness is unnecessary and preventable." The report further called attention to the victims of ophthalmia neonatorum, whom a drop of prophylactic, at the proper moment, would have saved from a life of blindness. Then, more than a quarter of all children in schools for the blind were there because of ophthalmia neonatorum. Today, the percentage has dropped to approximately 7.

From the small committee that was formed at that time to inform the public and public health officials of the need of routine treatment of the eyes of all newborn babies, has grown the National Society; from that single point of attack have grown the activities of the Society to save sight in other periods of life.

The development of sight-saving classes, a form of specialized education for children with sight so defective or so impaired that they would not profit from educational material provided for normally seeing children, has markedly reduced the numbers of misfit children, both in schools for the blind, where they did not belong, and in the regular grades in the public schools, where they could not have been adjusted to the visual demands. In 1913, two sight-saving classes were opened for the benefit of visually handicapped, seeing children; today, nearly 500 classes are giving partially sighted children opportunities for education equivalent to those given normally seeing children, without the physical hazard of further deterioration of their sight, and without the psychological hazard of unfair competition. We feel that the value of specialized education has been recognized, in that sight-saving classes continued to increase in number even at a time when other educational budgets were being cut; still, only a tenth of the children needing this type of educational assistance are receiving it.

Early in the work for proper education of the partially sighted child, we realized the importance of optimum seeing conditions for every child. Lighting of classrooms, arrangement of seats, improvement of textbook typography, consideration of posture as it affects eye conditions, have also been considered. Inspection of the eyes of school children for the purpose of screening out those in need of further eye examination—both for pathological conditions and for refractive errors—and the visual acuity test for the preschool child have been urged to good purpose.

But with the tempo of life changed, the program for the reduction of eye injuries from accidents, particularly industrial accidents—although it continues to show results—leaves much to be accomplished. The provision of goggles, machine guards, better illumination—which in itself not only speeds up production and efficiency but also may prevent fatal and disabling accidents—has contributed to a visible decrease in eye injuries. The *Bulletin* of the New York State Department of Labor (November, 1935, p. 293), commenting on the reduction in the number and severity of eye injuries in 1934, says: "This . . . . shows to what extent the use of goggles when operating such machines as abrasive wheels, better safety measures and education in accident prevention have been successful in reducing costly injuries in factories."

It is not always possible to prevent every type of eye accident, particularly among children, whose every move is unpredictable. Yet many children are exposed needlessly and thoughtlessly to danger. Air-rifles and cap pistols contribute their share to eye accidents and injuries; the usual Fourth of July celebration — blinding, maiming, burning and killing with fireworks hundreds of children—is a challenge to parents, teachers and any others having a community responsibility for the safety of children's sight.

A cooperative undertaking with the American Social Hygiene Association and the American Medical Association is the program to inform the public in general and the private practitioner of the need to protect every unborn child from the ravages of prenatal or congenital syphilis. The very taking of the terms, "syphilis" and "gonorrhea," out of the obscurity of prudery and bringing them into the bright light of scientific fact may save the sight of many children yet to be born.

The National Society's function is to procure such scientific knowledge concerning the prevention of blindness and the conservation of vision as is susceptible of sociologic interpretation, and to promote such social action, whether by public or private agencies, as will prevent ocular difficulties whenever possible and provide necessary care when ocular troubles exist. Ours is the duty to point the way, to sound the warning. Like the little Dutch hero, in McGuffey's Fourth Reader, we stand with our finger in the dike; the responsibility for stemming the tide permanently rests with society as a whole. Cooperation with health and safety agencies, with educators and legislators, has brought about some reduction in preventable blindness. Elimination of preventable blindness will come about not through any one agency but through a civilization that will go to the roots of the causes and spread of venereal diseases; to the bottom of industrial hazards; to the fundamentals of a social structure that permits little children to lose their vision because of malnutrition, that permits carriers of hereditary blindness to bring into the world more blind children, that permits fakirs to batten upon the despair and credulity of men and women who are losing their sight.

In your efforts to make sight more efficient through better lighting, you assume the responsibility that falls upon every agency or organization dedicated to public service. In rendering the very important task of providing illumination for schoolrooms, office desks, and homes, bear in mind that this is but one of the aspects of seeing. The efforts of bacteriologists, chemists, engineers, physicians, educators, social workers, health agencies, eugenists, all play a part in preventing blindness.

The National Society is a lay organization, supported entirely by voluntary contributions from the general public. Naturally, an organization established and maintained for philanthropic service cannot become a partner in any commercial venture. Yet we stand ready on every occasion, as we have done in the past, to enter into consultation with local sight-saving councils and Better Light—Better Sight movements in planning a real program of saving sight. We offer our help and our cooperation to all who assume the responsibility of keeping from blindness those who, unless great efforts are expended and real service given, may one day face absolute darkness.

In your local campaigns you are stressing better light for better sight. But, as members of society, you have the greater responsibility of lending your support to all—agencies or individuals—who are directly or indirectly interested in the prevention of blindness and the conservation of vision.

Some Contributions of a Far-Flung Public Service Company to the Well-Being of a State

By J. F. Owens

President, Oklahoma Gas and Electric Company,
Oklahoma City, Okla.

An Address before the Second General Session of the Fourth Annual Convention of the Edison Electric Institute, St. Louis, Mo., June 2nd, 1936

IT would be interesting, but unnecessary, to trace the origin and the growth of the electrical industry, beginning with Franklin and his kite in the year 1752, or to recount the experiments of Michael Faraday, and the invention of the dynamo, which is generally accredited to him, in 1831. It is related that when Faraday explained his invention to the great Gladstone, the latter made the query, "What is it good for?" Faraday's reply, "Well, maybe some day you can tax it," might, in the light of recent developments, be considered prophetic. Our industry paid $251,000,000 in taxes in the United States in the year 1935, or $2.00 for every man, woman and child in the country.

The Record of Electric Service

Suffice to say, the electrical industry really began with Edison's Pearl Street Station in 1882. We might go on with the researches that led to the knowledge of the importance of a 24-hour load and the recognition of the wastefulness of small individual plants. Could we gather together an estimate of the energy, the time and its value in money; in research resulting in inventions and the application of the resultant discoveries; innovations, thought and energy devoted to increased sales, which demonstrated the immutable economic law of increasing returns, the figures would be astounding, even in these days of billions.

It is significant that in all of these developments, the part played by governmental agencies was nil. The realization of the value of interconnection and the resultant scrapping of small municipal plants might be considered the second great phase in bringing about the application of electricity to the improvement of social standards in which our industry has played and is playing such an important part. Our industry has doubled the volume of its total output once in every seven years, resulting in a decrease in the sale price of residential

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service from 25 cents per kilowatt-hour in 1882 to an average of 5 cents per kilowatt-hour at present. The reduction in the sale price since 1915 has been 40 per cent, in spite of a general rise in all industry costs, including about 150 per cent increase in wage rates. Truly, an epochal development For, as so well stated by Mr. William Green in 1927, we have proved that the compensation of wage earners can be increased substantially, while the cost of manufacturing is materially reduced. What industry has contributed more to our high standard of living; and what more overall could society ask of any industry than that which is evidenced by the record of the industry of which we are a part?

With this unprecedented growth in industrial capacity and the employment of fifty electrical slaves for each worker has come many fallacies. It is not my purpose, in this talk, to go into a lengthy discussion of political control and management versus the established American principles of free play for private initiative, nor to point out, except as may be necessary to demonstrate the performance under American ideals as against the promises made by politicians who would foist on us decadent systems of other nations.

Today, we are confronted with many fallacies. The statement frequently made that modern industrial development diminishes employment is perhaps the worst. With the unprecedented growth in industrial capacity and the harnessing of fifty electrical slaves for each worker has been introduced the popular theory that our present industrial ills and unemployment can be traced to our mechanized age.

Calculations prepared by Professor Frederic C. Mills, of Columbia University, an authority in statistical research, for the National Bureau of Economic Research, Inc., and published under the auspices of the Bureau, show that from 1899 to 1929, while our population increased 62 per cent, our number of wage earners increased 64 per cent. The output per wage earner over the same period increased 90 per cent and the total volume of physical production increased 211 per cent.

To the pioneers in this industry; to the chemical research initiated and fostered by private initiative; to the intelligence and the devotion of those engaged in electrical development over the past fifty years goes a major portion of the credit for this social and economic evolution.

The Contribution of One Company

It is rather my purpose to use as an illustration factual information concerning the development of one company, which I believe to be typical of what has happened in hundreds of cases throughout the United States.

This company had its beginning in 1902. With the help of a strong holding company which enabled it to broaden its activities and to bring the results of the demonstrated advantages of large central stations and interconnection to

the towns, villages, and communities in its territory, it has back of it the following record:

(a) Local distribution systems have been constructed in 85 communities where no electric service previously had been furnished.

(b) Local distribution systems were purchased in 138 communities, of which 112 were from private interests, and 26 from municipalities.

(c) Of the 138 communities acquired by purchase, 7 were receiving only limited hour service. Today, they are obtaining electric service as complete as that in any metropolitan center of the country.

(d) Transmission line service was immediately made available in the 85 communities wherein the company constructed the local distribution system.

(e) In 129 of the 138 communities wherein the distribution systems were acquired, substantial rebuilding of the systems was required to insure adequate service.

(f) Distribution extensions were made immediately in 110 of these 138 communities to serve customers, who, because of high rates, unreliable service, or perhaps for other reasons, had not availed themselves of electric service.

During the year following acquisition by purchase from private owners, domestic rates were reduced in 84 of the 112 communities, the reduction ranging from 10 to 50 per cent and averaging 22 per cent.

During the first year following acquisition from municipalities, domestic rates were reduced in 22 of 26 communities, the reduction ranging from 10 to 50 per cent and averaging 22 per cent. During the year following the inauguration of electric service and the establishment of standard rate schedules by this company, 40 communities received rate reductions, averaging 17 per cent.

In every instance, the properties acquired from municipalities were found to be of poor design, obsolete, inadequate, and in such run-down condition as to require substantial or complete rebuilding. Under the improved service and correct rate schedules, the domestic consumption has increased throughout these communities by amounts ranging from 50 per cent to over 500 per cent, and domestic customers' bills in the communities have been reduced approximately 35 per cent.

Following the bringing of complete electric service to small towns, communities and hamlets throughout the territory, a well-planned and aggressively promoted action was taken, which today has covered a period of 10 years, to extend service to tract dwellers and farms within the territory served. Today, 2,436 dwellers on tracts and 620 farmers enjoy complete 24-hour service at reasonable rates with profit to the dwellers and to those residing on the farms.

These far-reaching social and economic advantages in the numerous small cities and rural communities is the contribution of one, and I believe is typical of all, far-flung public service operating companies. We have a right to be proud of this record. I submit the question: Could political management have made this possible?

Private Versus Municipal Rates in Oklahoma

Sixty-one towns in Oklahoma are still served by municipally operated systems.

Taking our company as a basis and grouping the communities by population, with weighted averages, we find the following results as reported by the Federal Power Commission Residential Electric Rate Survey January 1, 1935.

Before allowance for taxes, residential electric rates in municipal plant towns in the same size communities in Oklahoma average from 5 to 35 per cent higher than our company, as follows:

	25 Kwhr	40 Kwhr	100 Kwhr	250 Kwhr
Municipal Higher..	6%	5%	29%	35%

After allowance for taxes on the basis of taxes paid in towns of similar size the weighted average difference ranges from 20 to 55 per cent, as follows:

	25 Kwhr	40 Kwhr	100 Kwhr	250 Kwhr
Municipal Higher	22%	20%	48%	55%

This is an absolutely fair and honest comparison as we have included only those communities in size which have municipal plants, and have not averaged our larger communities above 25,000 population, which would reduce our average, giving us an even more favorable showing.

It will be noted that the difference is greatest in the higher consumption blocks—the segment of usage upon which the Federal goal of an "electrified America" depends. Thus, it is evident that our contemporary public ownership friends have neglected this aspect of the business.

Interconnection More Reliable

There can be no doubt that interconnected service is more reliable. Thus, in addition to the cities, the smaller communities now enjoy 24-hour reliable service at lower cost.

May I give you some typical service statistics of my own state?

(a) 91 per cent of the incorporated communities in Oklahoma have electric service. 85 per cent of these communities are supplied exclusively by private interconnected systems.

(b) 98 per cent of the people in Oklahoma living in incorporated communities have access to electric service. 87 per cent of this service is supplied exclusively by private interconnected systems.

(c) 93 per cent of the incorporated communities in Oklahoma under 300 population have electric service. 90 per cent of such communities are supplied by private companies.

(d) In addition, 106 unincorporated communities in Oklahoma have complete electric service; all supplied, of course, by private companies.*

What of the national picture?

(a) Every town or city in the United States over 1000 population has electric service. 82 per cent of such towns are served exclusively by private companies.

(b) 99.7 per cent of the total population in the United States living in incorporated communities has access to electric service. 88 per cent of this population is served exclusively by private companies.**

(c) 90 per cent of the incorporated communities in the United States under 1000 population have electric service. 92 per cent of these communities are served exclusively by private companies.*

This is the achievement of the American electrical industry under the impetus of private initiative. It is not a governmental achievement. The contribution of government to this record is negligible. The record looms high in our national, social and economic progress.

The electric power production in the United States has increased 110 per cent since 1920 or more than doubled. Electric power production in Oklahoma has increased 250 per cent since 1920. Both the national and the local achievements have come almost entirely from interconnected private, and not TVA's.

The United States Census of Manufacturing shows 4 hp. per wage earner in 1923 and 5 hp. per wage earner in 1929. The corresponding figures for our state are 6 hp. in 1923 and 7 hp. in 1929. Converted to manpower at the accepted ratio of 10 to 1, this means that every factory worker in the United States has fifty slaves at his command, or, in Oklahoma, seventy slaves. The Census Bureau shows that factory power equipment in 1929 was 74 per cent electrified, compared to only 33 per cent in 1914.

The social and economic implications of this electrical progress are inspiring. Socially, it means a higher standard of living, shorter hours, better wages, and greater output at lower cost.

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* Service and population figures are from the 1930 Federal Census and the 1935 Federal Power Commission Residential Electric Rate Survey.

** National Service and population data from the 1930 Federal Census and the Edison Electric Institute.

Electric Power and the Working Man

I can do no better than refer to a masterful address by the Honorable William Green, President of the American Federation of Labor, delivered before the 50th Convention of the National Electric Light Association at Atlantic City, June, 1927, on this subject. Mr. Green paid the following tribute to Thomas A. Edison, then living, which is as great a tribute as any man could ever receive. Mr. Green said:

"The working people revere and love him, for they know that as a result of his labor they have been relieved of much of the drudgery of exacting toil."

". . . The lives and welfare of the great mass of working people associated with industry have been vitally affected through the introduction and use of electricity. . . *Electricity has proved to be a revolutionary factor because through its adoption and general use it has proved that the wages of wage earners can be substantially increased, while the cost of manufacturing articles is materially reduced. The effect of this economic development was so far-reaching that it made an appreciable difference in the real wage that the worker received.*" (Italics Supplied.)

Mr. Green elaborates further on the relation of electric power and the working man, as follows:

"The American worker is highly efficient. Electric power and machinery enable him to use that efficiency to its fullest capacity. An analysis of the industrial situation shows that electric power is the greatest contributing factor toward the increase in the efficiency and productivity of the working people of our country."

Mr. Green then stresses the importance of industrial freedom, as follows—which is most timely in its present application:

"Both employers and employees in America have been free from the domination of autocratic control and governmental dictation such as prevails in some other lands. . . .

"Industrial freedom is as essential to human happiness and human welfare as political freedom. *Let us hope our nation will always remain free from governmental, autocratic and dictatorial control of its industries and its workers.* (Italics supplied.) The workers prize these blessings and benefits very highly because they mean more to them than to any other class of our citizenship. They cherish them as priceless rights and they are determined to transmit them as a heritage to their children and to succeeding generations."

The True Function of Government

In this connection, since I have before emphasized that all of this record was brought about without the assistance of government, it might be well to quote a statement made by Major George L. Berry, Coordinator of Industrial Cooperation, in the report of his Committee on "Government Competition with Private Enterprise," as reported in the *Engineering News Record* of April 9, 1936. Mr. Berry said:

"The government's function is to protect and promote the economic activities of its citizens, not to supplant them. The inevitable effect of expanding governmental activities into the field of productive business and industry, is to increase governmental expenditures while decreasing tax revenues, and to dry up the sources of government income.

"Once embarked upon this course, the government is placed in the difficult position of having either to absorb the functions of private enterprise which its competition has destroyed, or to withdraw completely from the devitalized fields of private activity.

"Any activity once introduced into the government, inevitably tends to expand to larger and more formidable proportions."

Taxes and Electric Rates

Since the principal function of government today seems to be that of devising ways and means of getting more and more revenue through taxes without resorting to the time proved method of reducing expenditures, comparisons of taxes with the cost of electricity are interesting.

Records show that the average motorist in Oklahoma uses two gallons of gasoline a day. The state tax on two gallons of gasoline is 8 cents, the Federal 2 cents, a total of 10 cents a day in taxes on gasoline; or approximately the cost of electric service to the average residential user.

The state tax on a package of cigarettes in Oklahoma is 3 cents, Federal 6 cents, a total of 9 cents. The average home electric is approximately $3.00 a month, slightly more than the tax alone on the average smoker's cigarettes.

In 1929, throughout our system, the residential user paid an average of 8 cents per kilowatt-hour; this, of course, includes large and small communities and hamlets. In 1935, the average was 5½ cents per kilowatt-hour, a reduction of 30 per cent in the cost of home electric service during the depression. In contrast, general living costs are again on the upgrade.

I repeat that I have not recited the data of my own state with the thought that it is extraordinary; rather, I know, without doubt, it has been excelled in many places in the United States. I am sure that certainly it is nothing more than typical.

Socialism on the March

The query may well be made, in view of this national record and in view of the records of operating companies throughout the country—why does the present administration insist on pushing its program for the socialization of the electrical industry?

On March 11, 1927, according to a report made by H. S. Raushenbush, a meeting was held in the office of Senator Norris in Washington. The purpose of this meeting was that of discussing the reasons which prevented the advance of Socialism in America. According to Raushenbush's report, the tenets of Carl Marx and Engel were discussed. Direct action was felt to be impossible in America. It was the consensus that a beginning should be made in the socialization of all natural resources, and probably because the industry is well set up, electrical companies were selected as the first line of attack. Read the report of this meeting. It is found in the *Red Book,* published by the National Electric Light Association, in exhibits offered to the Federal Trade Commission.

Is any thinking man so credulous as not to believe that the present program has as its objective the socialization of all natural resource industry and eventually the socialization of all industry? But, it will do little good for you and me to read papers before a group of men who are already probably more familiar with the facts than I. It will do very little good for us to listen to facts that prove a remarkable record on the part of this industry in the advancement of civilization.

Presenting facts before legislative bodies is necessary; it is good insofar as its effect goes, but legislators are elected by and responsive to what they think is the will of the people. The masters of America are still the rank and file of the people of these United States. They live on the farm, they work in the factory, they clerk in the stores, and it is they to whom Congressmen and Senators are constantly listening. A vast majority of the people in America are not Socialists. I think it safe to say that a vast majority of the people in America abhor the thought of Socialism. They will act, if they have the facts.

Facts Must Be Personalized

The question of distribution of material things, of goods and wares has been given much thought and much study. What is needed today is that the best minds of our nation be devoted to the matter of distribution of factual information. It is not enough to write

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Winners of 1936 Prize Awards

THE annual awards established to suitably recognize outstanding performances of electric light and power companies, and to stimulate original contributions by individuals on subjects of interest to the industry were presented at the closing session of the Convention, June 4th, by Mr. Frank W. Smith, Chairman of the Prize Awards Committee of the Institute.

The awards comprise first, the Charles A. Coffin Medal awarded in recognition of a distinguished contribution of a public utility operating company. The second group includes those in recognition of outstanding accomplishments by companies in specified activities. They are the George A. Hughes Award for the greatest contribution to the development of the domestic electric cookery load, the Augustus D. Curtis Award for the greatest contribution to the advancement of artificial illumination of Commercial and Public Buildings, and the Thomas W. Martin Award for accomplishments in rural electrification. The third group includes prizes to individuals for essays on subjects relating to the electric light and power industry, embracing the H. M. Byllesby Prizes, B. C. Forbes Prize, A. L. Lindemann Prizes and the James H. McGraw Prizes.

Mr. Smith reported that 250 papers and exhibits were submitted by employees of 106 companies in 42 states and Canada, and these papers, like those submitted in previous years, will be on file at the Institute Headquarters, where they may be examined, or loaned to member company representatives upon request. The many valuable contributions brought forth through these contests will be reproduced in forthcoming issues of the Edison Electric Institute Bulletin.

In most cases the recipients were present at the meeting to receive the awards from the hands of the donors of the awards. In giving his report, Mr. Smith expressed his appreciation to the donors and to those who took part in the several contests, and outlined the points wherein the winning entries in the contests excelled. (The full report of the Prize Awards Committee will be published in the next issue of the BULLETIN.)

The awards and their recipients follow:

Charles A. Coffin Award

To the public utility operating company which has made a distinguished contribution to the development of electric light and power for the convenience of the public and the benefit of the industry.

Gold Medal awarded—Idaho Power Company, Boise, Idaho, K. M. Robinson, President.

Cash Prize, $1,000 — Employees' Benefit fund.

Augustus D. Curtis Award

To the company showing the greatest contribution to the advancement of Artificial Illumination in commercial and public buildings.

Certificate awarded — Metropolitan Edison Company, Reading, Pa.

Cash Prize, $250 — E. J. Ingram, Lighting Director.

George H. Hughes Award

To the company showing the greatest contribution to the development of domestic electric cookery load.

Cup awarded—Kingsport Utilities, Inc., Kingsport, Tenn., Carl A. Thormburg, General Manager.

Cash Prize, $1,000—J. E. Wright, Commercial Manager, for distribution within the terms of the award.

H. M. Byllesby Prizes
(Subject—Accounting)

First Prize, $100—H. D. Anderson, American Gas & Electric Company, New York, N. Y.

Second Prize, $50—Charles L. Betts, Jr., Westchester Lighting Co., Mt. Vernon, N. Y.

Third Prize, $25—Walter Bergmann and Henry G. Wingardner, New York Edison Company, Inc., Brooklyn, N. Y.

Honorable Mention — Augustus E. Munich and Chadd H. Chase, Brooklyn Edison Company, Brooklyn, N. Y.

B. C. Forbes Prize
(Subject—Public Relations)

Cash Prize $250—Louis F. Conti, Westchester Lighting Company, Mt. Vernon, N. Y.

Honorable Mention—R. L. Laudenslager and A. C. V. Diehl, Brooklyn Edison Company, Brooklyn, N. Y.; A. G. Mitchell, Philadelphia Electric Company, Philadelphia, Pa.; J. B. Ells-

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K. M. Robinson, President, Idaho Power Company, Receives the Charles A. Coffin Award from Judge C. W. Appleton, Vice-President, General Electric Company

Modernize—Electrify Your Kitchen

By George E. Whitwell

Vice-President in Charge of Sales, Philadelphia Electric Co., Philadelphia, Pa.

An Address before the Second General Session of the Fourth Annual Convention of the Edison Electric Institute, St. Louis, Mo., June 2nd, 1936

"MODERNIZE — Electrify Your Kitchen!" This sounds like a pretty big order; yet it offers a real opportunity for meeting some of the necessities that confront us. If you think that it is too big an order, if you think that as a project it will develop too slowly to be of much avail in helping to solve today's problems, if you think that it involves too many difficulties and too much work, or if you think that its chances of success are meager, let me tell you the story of the bee and the clover:

Remember that a red clover blossom contains less than one-eighth of a grain of sugar; that 7,000 grains are required to make a pound of honey; that a vagabond bee, seeking everywhere for sweetness, must obtain this material from 56,000 clover heads. Remember, too, that the bee is compelled to insert its proboscis separately into each flower tube and that there are about sixty of these to each head.

Remember, also, that in performing that operation, 60 times 56,000 or 3,360,000 times, the bee gets only enough nectar for one pound of honey—and then doesn't get the honey. I believe that operating under this slogan, "Modernize—Electrify Your Kitchen," we as an industry can accomplish much more than is possible for the bee and with much less work, and the honey resulting from the modern electric kitchen will remain with us as a matter of substantial and quickly obtained increases in revenue.

No Subscriber to Doctrine of Scarcity

Our industry has never subscribed to the economic doctrine of scarcity. Every important move that it has made demonstrates the truth of this statement. On the contrary, the constantly decreasing unit cost of electric service has resulted from successful efforts along the lines of load-building—a form of wealth creation. This example of cause and effect has proceeded over the years at a constantly accelerating tempo, until today, in many parts of the United States, amazing accomplishments, particularly in residential load-building, are being witnessed. Yet something more is needed —something still more greatly opposed

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to that doctrine of scarcity which is typical of those Governmental policies which are responsible for many of the difficulties which beset us and for which remedies must be found.

We are all pretty much agreed that the selling of more kilowatt-hours, with their attendant reduced unit prices, still remains our best single defense against attack. While all fields of electric utilization are important, it is probably true that residence consumption is more immediately responsive to intensive sales effort and will produce more rapidly the required greatly increased consumptions of electricity. Similarly, in the domestic classification, while all electricity-consuming devices are important and helpful, two stand out as possible of producing consumptions sufficiently large to permit us, quickly enough, to remedy our difficulties and meet the attacks against us. These two are the electric range and the electric water heater—the kitchen twins which, with good lighting, the refrigerator, the dish washer, the clock, the exhaust fan, numerous other electric appliances, adequate and convenient cabinet and working spaces, and atractive and serviceable floor and wall coverings, constitute the modern kitchen.

I do not believe that the United States as a nation will ever be able to buy or hope or wish itself out of the trouble in which it is. I have never heard of a man who could drink himself sober or spend his way out of debt. But he can create wealth instead of destroy it; he can substitute thrift for waste; he can substitute work for dependence. So with a nation. So with electric utilities. As a suggestion for our industry, I bring you the Kitchen Modernizing Program of the Edison Electric Institute in cooperation with the National Electrical Manufacturers' Association.

Opportunity Has No Ceiling in America

Only last week I read in a Philadelphia newspaper a page advertisement signed by Mr. A. P. Sloane, Jr., President of the General Motors Corporation. Perhaps you, too, read it in one of your local newspapers. Describing the tremendous advance in railroad operation through the new and lighter so-called stream-lined trains, powered by engines of General Motors design, this advertisement, among other things, said that—

". . . by the results already attained, they (the trains) once more vividly demonstrate that *opportunity has no ceiling in America.*

"A vast part of this opportunity today lies in replacing the old with the new—of putting to work the tremendous advances in technology sweated out by the partnership of industry and science, intensified during the years of depression—the job of rebuilding America.

"The way to increase employment is to create more jobs by making existing goods and services constantly better—greater in value—lowering their cost, not by reducing wages but by greater efficiency, advanced technology and better management. And not only by thus building better the things of today but by pioneering new things to build tomorrow and by making all things more attractive and more desirable, we create wider markets.

"Whoever in this way serves progress most surely serves America."

I offer you the Kitchen Modernizing Program as a method of replacing the old with the new; of putting to work the tremendous advances in technology of electric kitchen appliances; of increasing employment by creating more jobs through making existing electrical goods

and services constantly better, and of pioneering still newer things to be built tomorrow. The Kitchen Modernizing Program will not only serve progress but will serve our customers, ourselves, and the whole of America.

To Sell Planned Kitchens

Three years ago, at the first annual convention of this Association, it was my opportunity to speak to you in connection with the then unnamed Better Light-Better Sight Program. I did not know then that that Program was really the subject of my talk, for the activity was only in its beginning or conversational stages. But those were profitable conversations because all of us are reasonably familiar with what the Better Light-Better Sight movement has done not only for our industry but also for a number of allied industries. Today the National Kitchen Modernizing Program, just emerging from the conversational stage, lies before you. It has much in common with the Better Light-Better Sight Program. It merits your attention.

There is nothing particularly new about electric kitchens. I remember well when, fifteen years or so ago, as a gas man on the Pacific Coast, my chief worry was to compete with the all-electric kitchen. The idea was well started then. The novelty of the present activity lies in concerted action by the industry as a whole toward accelerating the acceptance by the public of the Modern Electric Kitchen. It provides a new national approach to the selling of electrical kitchen appliances.

The purpose of the program is to sell a planned kitchen to the housewife, thus giving the industry a new tool for more rapid, and perhaps volume, selling of ranges, water heaters, refrigerators, dish washers and other kindred devices. It may be operated in either or both of two ways: (1) The entire modernization may be carried out all at once or, (2) by means of a definite plan as a goal towards which to work, the householder may proceed step by step.

The first method, namely the ensemble selling of a kitchen, will doubtless have limited application. There is no limit to the second method. It calls, first, for the electric refrigerator; then, the electric range or water heater or both; then, perhaps, the cabinet work, lighting and decorative effects; then the miscellaneous other appliances; but every move will be according to a plan and the result will be a modern step-saving kitchen. Always the housewife has before her an unreached goal and money will not be diverted into other merchandising channels from the job of reaching it.

The logic of this method of procedure has best been demonstrated by the plumbing supply business. Remember the days of the old tin tub in the bathroom? It was an event when the old tub was replaced by the cast iron one mounted on four legs. That was an individual sale. But plumbers learned rapidly and long since began selling bathrooms as a unit; equipment matching; walls and floors conforming to a color scheme. This is the outstanding example of ensemble selling. The bathroom is a unit—not a collection of different pieces of equipment.

The National Kitchen Modernizing Program is endeavoring to apply the same line of sales approach to the kitchen. Realizing that a complete remodeling job is more expensive than many people can readily and immediately afford, the program stresses the importance of first establishing a plan, then proceeding along the plan until the desired results have been achieved.

Three Markets

Three general markets immediately present themselves as those in which the heavy load-building appliances can be sold readily by putting into active use the slogan "Modernize—Electrify Your Kitchen." First is the individual home owner, who, now for the first time in many months, has some money to spend and cannot only be persuaded to spend it for immediate improvement in the kitchen but also can be sold the idea of planning the expenditure of additional money, as available, for the completion of kitchen modernization in accordance with a definite procedure. Usually this buyer is the housewife. Usually she is a home owner. In some instances she may be an immediate home builder.

The second Kitchen Modernizing outlet is represented by blocks or groups of homes which, built six or more years ago as a building development, have found their way back into the hands of insurance or trust companies, have been rented by these agencies for as long a period as the property was in sufficiently good condition to be rented, and now must be thoroughly remodeled before offering them for sale in the nationally improving real estate market. You will find the insurance companies ready and eager to receive any help along the line of kitchen planning and modernizing. I know this to be true because of my personal experience in this connection during the last eighteen months.

The third market is a vast one. It is steadily growing, can be sold, but, if there is delay, will slip away without our realizing that it has been within our grasp and gone. I refer to the thousands of so-called "operation building" homes which are springing up like mushrooms in almost every section of the United States. Of the fact that these operation builders can be sold on modern electric kitchens, even when the houses that they are erecting sell for as little as five or six thousand dollars, there is ample evidence. I am told that in Washington, D. C., during the first year of effort, modern electric kitchens went into 1400 such homes. I know that in the last two weeks modern kitchens have been contracted for in nine building operations in the City of Philadelphia. On a single day, 181 ranges were bought for such homes. Others are under negotiation. The job is surprisingly easy. I suggest that you try it.

Repairs and remodeling and building have been delayed so long that now that money is more plentiful, there is a rush to get these things done. It has been estimated that this year alone will see five million dollars spent on kitchen modernizing. A good proportion of this sum will be spent for appliances; the balance for cabinets, plumbing, wall and floor coverings. We feel very strongly that the timing of this activity could not be better, coming as it does on the rising tide of building activity.

How the Program Operates

The operation of the National Kitchen Modernizing Program activity is conducted by The Kitchen Modernizing Bureau of this Association.

An executive committee composed of representatives of manufacturers, utilities and trade associations has charge of matters of policy; regional directors have been appointed and are functioning in all sections of the country; a planning committee has the responsibility for publicity and the outlining of campaign plans. The entire activity is under the direction of a paid staff located at E.E.I. Headquarters and including traveling representatives, who, so far, have visited 60 cities in 26 states.

But let me state most emphatically that, in spite of what may look to you like a somewhat formidable organization, the National Bureau exerts and can exert only a guiding influence, acting as a coordinator of plans so that local bureaus or activities may gain maximum

benefit from a program that is nation-wide.

Just how individual localities proceed is entirely up to them. There are many ways of doing this job and no one way will work in all sections of this country. There is always one best way for each community to proceed and that way is left to the community to determine. In some cases a utility-sponsored activity is best, whereas in other regions such an arrangement might produce unfavorable trade relations so that it would be a job for the local Electric League. Or, if there is no league, a committee of interested individuals may function as the sponsor. There is a wide range of choice in such matters and no attempt is being made to set a pattern to which all cloth must be cut. Suffice it to say that this activity can succeed as a national endeavor only if it is regarded as the summation of many completely autonomous local programs.

Bureaus Operating

There are at present thirty-two local bureaus in active operation in as many cities, and fifteen more definitely to be formed, some of which by now are probably in operation. Yet the activity is less than six months old. To give you an idea of the appeal of this program to large communities and small, and to indicate the extent of its spread over the United States, I am going to read, even at the risk of boring you, the list of bureaus now formed and in operation.

Birmingham, Ala.
(Birmingham Electric Co.)
Pittsburgh, Pa.
Dallas, Tex.
Hot Springs, Ark.
Chattanooga, Tenn.
Los Angeles, Calif.
Washington, D. C.
Miami, Fla.
Denver, Colo.
Augusta, Ga.
Boise, Idaho.
Shreveport, La.
Boston, Mass.
Lincoln, Neb.
Buffalo, N. Y.
Oklahoma City, Okla.
Philadelphia, Pa.
Fort Worth, Tex.
Omaha, Neb.
Portland, Ore.
Greenfield, Mass.
Knoxville, Tenn.
Salt Lake City, Utah.
Seattle, Wash.
St. Petersburg, Fla.
Wichita, Kan.
Pittsfield, Mass.
Spokane, Wash.
Nashville, Tenn.
Beaumont, Tex.
Springfield, Mass.
Hagerstown, Md.

Those that we are told are to be formed include the following:

Birmingham, Ala. (Ala. Power Co.)
Hartford, Conn.
Orlando, Fla.
Atlanta, Ga.
Indianapolis, Ind.
Brooklyn, N. Y.
Sioux City, Iowa.
Kansas City, Mo.
Charlotte, N. C.
Raleigh, N. C.
Syracuse, N. Y.
Cleveland, Ohio.
Allentown, Penna.
Providence, R. I.
Charleston, S. C.

There have been reported 84 electric kitchen displays in 28 cities and I believe we have only started. They include the following cities not already mentioned:

Cedar Rapids, Iowa.
Des Moines, Iowa (12).
Emporia, Kan.
Fort Scott, Kan.
Lawrence, Kan.
Leavenworth, Kan.
Parsons, Kan.
El Dorado, Kan.
Newton, Kan.
Pittsburg, Kan.
Wichita, Kan.
} Plus 4 dealers —total of 8
Minneapolis and St. Paul (11).
Jefferson City, Mo.
Scottsbluff, Neb.
Jefferson City, Tenn.
Newport, Tenn.
Sevierville, Tenn.
Seattle, Wash. (7).

An Imposing Start

This is an imposing start, but lots of the cities and communities represented by you, who are before me this morning, are not on the list. Frankly, I want to sell you the use of this new selling tool.

How is the job being done where local activities have been started? The answer is too long to be given here. For this reason, a display has been arranged in a room just off this auditorium. I urge you to look it over. I am sure you will find some ideas that will fit your particular program.

We have noticed that, while no universal procedure has been set up, certain steps suggested in the National Kitchen Modernizing Plan Book have been followed by most of the bureaus now operating. Briefly, those steps are as follows:

1. The local plan of operation should be set down in written form, so that everyone concerned may be specifically informed.
2. An information bureau, where full particulars on modernizing equipment, prices, terms, etc., can be obtained, should be established.
3. There should be organized a kitchen planning service—local, if possible, but, if not, by agreement with a manufacturer, magazine or other source.
4. One or more model electric kitchens should be open to the public.
5. There should be a definite and liberal advertising activity to further the local modernizing program and to inform the public where information and assistance can be secured.
6. Some agency should be definitely responsible for the program.

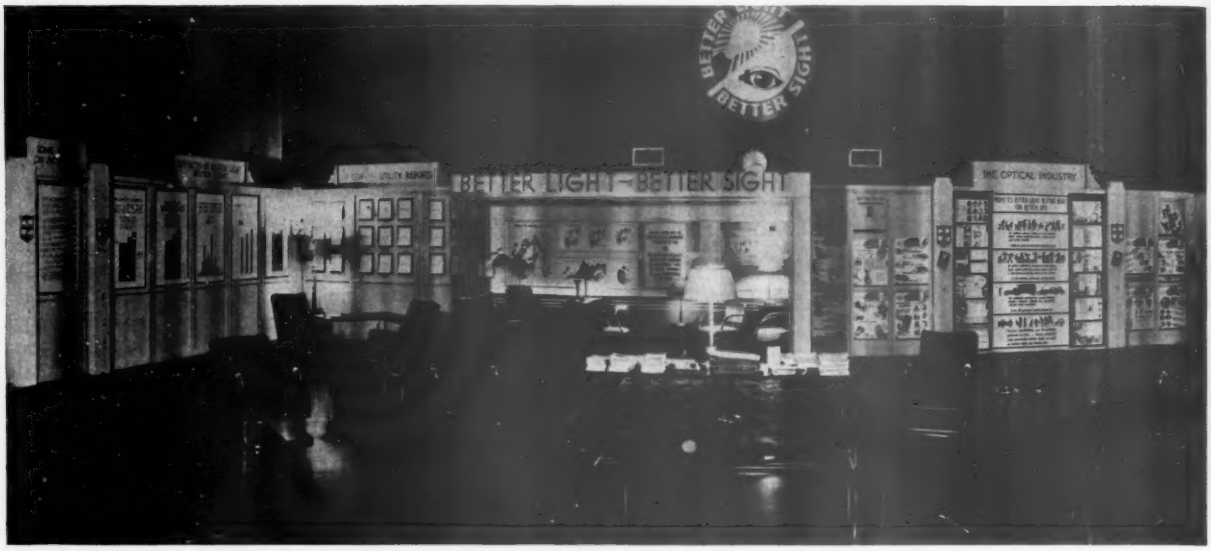
Many novel plans have been developed. I recommend to your attention particularly the ones in use in Knoxville, Miami, Omaha, Denver, Oklahoma City, Portland, Ore., and Brooklyn, N. Y. The localities have been chosen for specific attention only because of the completeness of the information that has been provided concerning them. Many others appear to be equally as attractive, unique and complete.

Planning and essay contests, architects' contests, discussions of kitchen planning at cooking schools, and the extensive use of radio are some of the means that are being employed. Active promotion is directed toward builders.

The Local Utility's Part

The part that we, representing the utilities, can play is an extremely important one. Quite naturally, the local utility will be the hub around which the activity moves. This is true regardless of the medium through which the program is presented. I have listed several suggestions for utility activity that it has been demonstrated will encourage dealer participation:

1. Act as a guide to dealers' activities, taking the lead in selling them on a sustained kitchen selling program and showing them how they profit from it.
2. Do a generous amount of promotional advertising which will encourage dealers to do product advertising.
3. Make a sales manual available to all participating dealers. The kitchen planning manual which will be released from Headquarters shortly will serve this purpose.
4. Promote a local direct-by-mail campaign to a selected list of prospects to be done by either the local bureau or by the utility.
5. Act as the coordinator in securing the participation of the other local interests such as plumbers, painters, hardware, furniture and department stores, cabinet and tile dealers, as well as wall covering and floor covering concerns.
6. Sell your own employees on kitchen modernizing, encouraging them to proceed on the step-by-step process to the ultimate planned kitchen.
7. See that dealers are kept informed as to all material that is made available by Headquarters and that they receive what advertising and display material they may need.
8. Encourage dealers to install model electric kitchens and arrange for demonstrations to be held by them.



BETTER LIGHT-BETTER SIGHT

I have endeavored to give you a picture of the progress of this activity from which you can draw your own conclusions. And speaking of drawing your own conclusions reminds me of a brief story which I have told before and some of you have heard. It is not particularly new but, nevertheless, is definitely indicative of the conclusions that are sometimes drawn from demonstrated facts:

A teacher in a grammar-school, wishing to impress upon young minds the evils of alcohol, thought of an impressive demonstration. She placed two glasses upon her desk; into one she poured water and dropped a worm. The worm wriggled contentedly about. Into the other glass she poured whiskey and dropped another worm which gave one ecstatic wriggle and subsided dead on the bottom of the glass. Turning to her class, she asked if anyone could tell her what that demonstration proved. "I can," said little Johnnie. "It proves that men who drink whiskey will never have worms."

We in the utility business like to think of ourselves as practical people; we make careful analyses of the job at hand and survey our customers and think up any number of complicated and intricate schemes to achieve our purposes. Sometimes I think we make things unnecessarily tough for ourselves. Earlier I spoke of the need for building load rapidly and that the electric range and the electric water heater were the key appliances that would give us that load as rapidly as we need it. The Kitchen Modernizing Program is the outgrowth of that basic need.

I know that comparisons are dangerous, but I would like you to recall again the beginnings of the "Better Light-Better Sight" activity. It started with no altruistic motives from our point of view but only as a means for stemming the tide of economy that was causing

ELECTRIFY—MODERNIZE YOUR KITCHEN

Views of the National Sales Programs Exhibit at the Convention

ELECTRICAL HOUSEWARES PROGRAM

alarming decreases in the use of electricity for lighting. The activity turned out to be one that is of the greatest benefit to our customers. Little did any of us think that that small beginning would grow to the point that "eyesight specialists," paint manufacturers, hotels, schoolboards, lamp manufacturers, instrument makers, and others, would take it up so wholeheartedly and make out of it the practical realization of the "Science of Seeing."

I see a very definite parallel in the Kitchen Modernizing activity. Admittedly we started it from selfish motives. But much progress has been made in this world of ours as a result of selfish desires or laziness in someone who devised a new machine or method to do that which was distasteful to him. We must have load, lots of it and quickly, in order to meet the strenuous times which we see ahead. It is true that in the development of our business we have neglected the most important room in the house—the kitchen. Our customers have neglected it, too. Methods are still in use that have not changed for generations and, while what was good enough for our grandfathers may be good enough for us, let me remind you that our grandfathers adopted new tools as they were developed. We now have the tools to make the kitchen the modern and attractive workshop that it should be. We have a program that appeals to appliance manufacturers, paint dealers, dealers in wall and floor coverings, cabinet and hardware dealers, carpenters, plumbers and even paper hangers. We have banks ready and willing to lend money for worthwhile projects and, last but by no means least, we have people in the frame of mind where they are willing and even anxious to spend some money.

To sum this up, we have provided for

(*Continued on page* 251)

RUNNING WATER CAMPAIGN

Views of the National Sales Programs Exhibit at the Convention

Why the Farmer Is Increasingly Interested in Electricity

By E. A. White

Director, Committee on the Relation of Electricity to Agriculture, Chicago, Ill.

An Address before the Third General Session of the Fourth Annual Convention of the Edison Electric Institute, St. Louis, Mo., June 3rd, 1936

WITH Rural Electrification development taking on a decidedly renewed impetus and this problem—for such it still remains—becoming more and more one of Farm Electrification, it would appear desirable to attempt to secure a perspective of American agriculture in which may be found many of the reasons why the farmer is becoming increasingly interested in electric service.

Perhaps the status of American agriculture today can best be described as one of readjustment, flux, or transition. This is not a situation which has developed suddenly. Various symptoms of this condition, in one form or another, have been manifest for some time. Some students say the year 1920 marks the date for the end of an agricultural era. After all, this specific date is not so important as the fact that it is far enough behind to leave no doubt that while the situation may be broadly and accurately described as one of relatively low income when measured by the expenditures, actual and desired, this generalization in no way indicates what has been going on in this important industry.

Previous to the year 1920 it was not uncommon for the individual farmer, over a period of ten, twenty or thirty years, to realize a handsome profit from the increment in the value of his land. We went through a cycle of constantly rising land prices. Here the emphasis was on the ability to hold land rather than the ability to operate it efficiently. As one economist is reported to have said in summing up a set of farm management studies: "These data clearly indicate that a farmer can lose money on operations and retire comfortably well off."

Changes in Land Value

It is only necessary to point out the change. Land prices have declined. It is doubtful if this country will ever again experience such a widespread in-

DR. WHITE

ducement to "sell land and move to town."

During this period our industries and urban centers were readily absorbing the surplus rural population. The country boy who went to the city seeking fame and fortune was frequently the hero of this period in American agriculture. How often public speakers would refer to "the farm on which I was born." How often the percentage of men born on the farm, with names listed in "Who's Who," was referred to. Yes, it was apparently quite the thing to get away from the farm. Certainly population flow and interest were cityward. The total percentage of our population living on the farm steadily decreased.

Far be it from me to even imply that much of this was not desirable. It is presented here briefly for the purpose of contrast with what we are facing today.

While these developments were proving important factors in our national life, agriculture enjoyed a sizable export trade. A large percentage of our production of wheat, cotton, and meat products went to foreign countries. This market, of prime importance to the farmer, was available at relatively little expense.

Stimulated by profit in owning land and an expanding market both at home and abroad, it was but natural for man to explore this country from one end to the other in order to locate tillable farm land. The speed and thoroughness with which this was accomplished had never before been approached in history. We were not satisfied until we had tried it all. As a result we have today the marginal farm on which, due to lack of natural fertility, size of holding, location, weather, or amount of debt, the farmer is not able to make a living. This is not a new problem by any means, but one which has been intensified by the developments of the past sixteen years.

The experience of older countries would clearly indicate that, sooner or later, we should expect a readjustment resulting in some contraction of our cultivated acres. Apparently this development has arrived.

Today, the farmer is facing sufficiently different conditions to justify the assertion that we are already well into a new, a different agricultural era. Practically all of our desirable virgin farm land has been occupied, our export markets have shrunk, the city has an unemployment problem, and agricultural profits must be secured from operation rather than increment in the price of land. On top of all this, the farmer, like the rest of us, is working out of the most severe economic upset which this generation has experienced.

Readjustment to Be Expected

Due to over-expansion of our land area devoted to farming, loss of a goodly portion of our export market, and many other factors, we can expect much internal readjustment in American agri-

culture. Yet I am far from the apparent frame of mind of the banker who, two or three years ago, seeking diversion, went to hear an Agnostic lecture. At the conclusion of the address the banker accosted the lecturer thus: "You say there is no hell?" "Why, certainly not!" came the emphatic reply. "Then you tell me where business has gone," was the poser put by the banker.

While agriculture has its problems, it is coming out of this situation with a remarkable record to its credit. More than one-half of our farms are without mortgaged debt. Equipment, while depleted in many cases, is more modern than ever before; crop acreage is being adjusted to new demands; science is opening new channels for agricultural products, and back of all this there is the clear thinking, sound sense, and business ability of the American farmer. This insures that agriculture will go forward.

The Demand for Rural Electric Service

It is significant that the national demand for rural electric service began to be expressed about the same year—1920—as has been designated for marking the beginning of a new era in agriculture. This was truly a desire of the farmer. It came from the grass roots upward. It has grown in both volume and intensity through the intervening sixteen years of transition, during at least one-third of which agriculture has been sorely afflicted with an economic depression. It is especially significant that during no single year of this period has there been a decrease in the total number of farmers served. True, there were disconnections, but the new customers outnumbered those who, for economic reasons, were forced to forego (we hope only temporarily) this service which is so essential to a modern living standard. So, in no uncertain terms the farmer has given evidence of his determination to obtain this service. Such a demand is fundamentally heartening. It marks the farmer as keeping step with progress. In fact, one who is really acquainted with the farmer would not think of him as acting otherwise. He, once again, cast his vote for American development.

Today, electric service is available to one million farms and perhaps three million non-farming rural residences, business institutions, etc. In the immediate future the extension of rural lines will be more and more a purely farm problem as the majority of non-farming rural prospects have already been reached.

Uses of Electricity on the Farm

In this connection it is well to clearly recognize that in the present status of development electricity has not made an effective entry into the tractive field. It is confined, from a practical standpoint, to those operations and uses where the prime mover or application mechanism, such as the heating unit, remains stationary. Under these conditions the majority of the energy used in the agricultural field is at present beyond the reach of the electric generator. Thus, on the farm we find the use of electricity well adapted to the household, the dairy farm, the poultry farm, the fruit and vegetable farm, and to irrigation pumping.

According to the best information available, about one-seventh of the total number of farms are classified as fruit, truck, poultry or dairy; more than one-third are classified as cash crop farms, such as grain and cotton, without any appreciable amount of livestock; slightly less than one-sixth are listed as general, and less than one-tenth are livestock other than dairy. So, on at least one-half of the farms of the United States the chief use would be in the household, and on a large percentage of this classification, the only use for electricity.

Thus to a large extent, even on dairy, poultry, and fruit farms, the use of electricity relates directly to living standards. That the farmer should have a high living standard is granted without one word of argument. It is clearly in the direction which we must look for sustained national prosperity. But an improved standard of living brings with it the necessity of meeting the costs of the same. Here we come face to face with the biggest hurdle in the path of rural electric development. The farmer wants the service. It will fill a real need. The sad fact is that the present farm income does not measure up to this opportunity. Gross farm income for the current year is estimated at Eight Billion Dollars, or an average of about $1,200 per farm—$100 per month. However, this does not tell the whole story. It has recently been reported that 80 per cent of the gross farm income is enjoyed by 35 per cent of the farmers. So we find two million, four hundred thousand farmers with a gross income of Six Billion, Four Hundred Million Dollars, and four million, four hundred thousand farmers getting along with a gross income of One Billion, Six Hundred Million Dollars, or less than $400 per farm per year. It is thus obvious that a material improvement in farm income is necessary for rural electrification to flourish in many regions.

What is reasonable to expect from agriculture in the near future? I believe developments will be along the following lines:

1. There will be a gradual increase in farm income.
2. The process of abandoning or combining into larger units the marginal farms, will continue.
3. The regaining of our export markets will be a slow process. At the moment it is problematical how much of this business we will ultimately secure.
4. The solvent farmer will continue to be cautious about going into debt for other than productive purposes.
5. The cityward movement will not be phenomenal. Instead, much more attention than has been the case in the past, will be paid to modernizing the farm home. Surplus resources, when available, will be employed to build up the farm.
6. Profit will come from operations rather than increment in the price of land.
7. Continued efforts will be made to enlarge the market for agricultural products in other outlets than food for human consumption.
8. The mechanization of farm operations, especially on farms of the higher income brackets, will continue at a rapid rate. Here electricity will play an ever-enlarging part.

A Most Constructive Record

This industry has a most constructive record in the Rural Electrification field. While much time could profitably be spent analyzing these accomplishments, I believe they are familiar to most of you. In any case, we are more interested in future plans.

In this connection it should be clearly recognized that only part of the responsibility for electrifying agriculture rests upon the shoulders of this industry. In the final analysis, farm electrification means electricity at work upon the farm, and the rate which should be paid for the service depends more upon the volume used than any other single factor. Therefore, low price per kilowatt-hour demands as large as possible use as the farmer finds advantageous from the economic and living standard viewpoints. So it is the function of your industry to furnish the service at as low a cost as is consistent with sound business principles. Needless to say, the service should be sold intelligently, and your rural service men are the best evidence possible that just this is being done.

It is the responsibility of the farmer

to put electricity at work to get every possible advantage, economic and social, from this service. In fact, it might as well be recognized that neither group, working single handed, can do the job. Cooperation, mutual understanding, give and take—these are essentials.

So we might well ask: What should be the constructive policy of this industry towards the further extension of rural service?

Financial limitations on the parts of these prospective customers will undoubtedly call for a long range, well developed program which many people would term conservative but which really will be distinctly progressive.

While many farmers today have the cash available to properly equip for the use of electric service, many more do not. These two groups are interspersed. Here is a farmer ready to go. His neighbor may not be able to finance the undertaking.

The avenue often suggested for the farmer without available cash is to borrow. While there is no generalization which fits all cases, I doubt the wisdom of a general movement designed to plunge agriculture further into debt at this time. Furthermore, there is little danger of such a movement going far for the simple reason that these prospective farm customers, by and large, are not going to rush into debt, not even for the pleasure of putting electricity to work.

Today we need more of the determination on the part of both business and government to intelligently serve the farmer rather than so much of this desire to patronize, reform, or educate him. His record indicates an ability to adequately cope with those things which are distinctly his own business. Furthermore, if I know him at all, he feels, and is, perfectly able to do so. He has no idea of willingly surrendering his freedom of thought and action.

So the sound policy for this industry would be to see that your rural rates and plans for line extension are as reasonable as it is possible to make them, making certain that the farmers fully understand the justice of these proposals. Then be ready and willing to extend service into such communities as are economically able to use electric service. Once your investment is established, as prudent business men you have a selling job to insure the continuing satisfactory

(*Continued on Page* 252)

SALES—ELECTRIC REFRIGERATORS

(Household Models Only)

MONTH OF APRIL AND FIRST FOUR MONTHS OF 1936-35

	Month of April 1936	Month of April 1935	Month of March 1936	First Four Months 1936	First Four Months 1935
Total United States	304,089	266,931	272,139	875,048	699,346
Maine	1,333	1,377	995	3,580	3,454
New Hampshire	1,290	986	880	3,401	2,391
Vermont	807	576	530	2,032	1,466
Massachusetts	13,316	9,847	9,985	35,892	26,564
Rhode Island	1,786	1,360	1,458	5,048	3,504
Connecticut	5,531	4,299	4,404	14,526	10,227
Total New England	24,063	18,445	18,252	64,479	47,606
New York	34,323	27,601	26,963	92,282	66,988
New Jersey	14,173	10,715	13,413	40,955	27,872
Pennsylvania	27,701	19,201	23,571	76,207	57,501
Total Middle Atlantic	76,197	57,517	63,947	209,444	152,361
Ohio	18,285	16,260	15,369	51,279	45,507
Indiana	7,588	6,790	8,024	24,622	19,091
Illinois	21,634	20,789	19,392	60,716	52,345
Michigan	12,726	11,263	10,167	36,095	31,782
Wisconsin	5,707	5,001	4,433	15,331	12,452
Total East North Central	65,940	60,103	57,385	188,043	161,177
Minnesota	3,035	4,823	3,477	11,603	11,660
Iowa	4,712	4,692	4,599	14,311	13,745
Missouri	9,678	8,838	11,460	29,879	27,563
North Dakota	463	777	571	1,905	1,850
South Dakota	723	986	804	2,695	2,812
Nebraska	3,101	3,514	2,553	8,573	9,609
Kansas	3,896	4,057	4,016	11,861	11,433
Total West North Central	25,608	27,687	27,480	80,827	78,672
Delaware	666	641	476	1,657	1,780
Maryland	3,625	4,369	3,347	10,316	11,114
District of Columbia	2,251	1,990	2,765	7,531	5,198
Virginia	5,105	3,945	4,030	13,583	11,596
West Virginia	3,864	2,814	3,340	10,433	7,678
North Carolina	6,619	6,969	5,810	17,692	13,926
South Carolina	3,326	3,466	2,923	8,636	6,220
Georgia	5,278	5,255	4,393	13,816	12,519
Florida	3,086	3,869	2,375	9,799	9,659
Total South Atlantic	33,820	33,318	29,459	93,463	79,690
Kentucky	3,226	3,812	4,103	11,395	8,755
Tennessee	5,827	6,346	5,087	15,065	13,264
Alabama	4,413	5,982	3,909	11,301	12,407
Mississippi	2,302	1,924	1,643	5,391	3,852
Total East South Central	15,768	18,064	14,742	43,152	38,278
Arkansas	1,749	2,182	2,299	6,465	5,763
Louisiana	3,712	3,295	3,060	10,506	7,969
Oklahoma	3,598	4,014	3,608	11,914	10,308
Texas	15,089	15,729	11,636	39,654	35,158
Total West South Central	24,148	25,220	20,603	68,539	59,198
Montana	1,192	1,110	1,208	3,877	2,611
Idaho	1,449	1,204	1,730	4,845	3,265
Wyoming	345	391	418	1,234	1,145
Colorado	1,932	1,819	2,162	6,373	6,241
New Mexico	718	938	618	2,029	1,988
Arizona	1,225	1,570	1,570	4,255	3,484
Utah	1,400	1,525	1,976	5,814	3,510
Nevada	369	214	315	1,209	633
Total Mountain	8,630	8,771	9,997	29,636	22,877
Washington	4,558	2,266	4,025	15,408	10,858
Oregon	3,400	1,593	3,385	10,778	6,692
California	21,957	13,947	22,864	71,279	41,937
Total Pacific	29,915	17,806	30,274	97,465	59,487

Figures based on report by the National Electrical Manufacturers' Association

How Can They Know?

By Adam S. Bennion

Assistant to the President, Utah Power and Light Company, Salt Lake City, Utah

An Address before the Fifth General Session of the Fourth Annual Convention of the Edison Electric Institute, St. Louis, Mo., June 4th, 1936

THAT title grew out of a discussion among a group of men some time ago in a utility company office as a result of the query:

"Why do so many people feel as they do toward the utilities?"

The usual observations were indulged:

"Too much money going to New York."
"Too much Wall Street control."
"Rates too high."
"Demand charge ridiculous."
"The people don't understand our business—they don't even know our language."

It was this last remark that prompted the forceful *"How can they know?"*

How can people know what to believe about the issues in the utility wrangle of the last four or five years?

Many men, who normally do good, straight thinking, are disturbed and confused in their mental processes. And where passion is mixed with the confusion prejudice and chaos are the result.

Here certainly is an anomalous situation. One of the finest industries in America, judged by any standard, is in the dog-house; and the American people —notably fair and open—all too many of them hoping that if the institution ever gets out of the dog-house it will be to be chained in oblivion.

The Industry's Record

The record of the industry speaks for itself:

In a short, half century it has built up service to 25,000,000 customers; stretched its lines into every hamlet in America of 1,000 population; extended its once restricted lighting service into every phase of human experience—from the surgeon's needle point to the giant crane of the mill or the huge shovel of the mine.

What a revolution it has wrought in the home where it sweeps, polishes, cooks, does the dishes, beats the frosting, freezes the ice-cream, turns on the heat in the morning and turns it off at bedtime, heats the water and cools the lemonade, air conditions the year 'round.

No other agency has ever so lifted the load from the back of man or opened the door to so much enriched living—

DR. BENNION

or destroyed the drudgery that aged our mothers.

And the fascinating thing about this development is that in the process the cost per kwhr. has been reduced from 19c. to an average home use rate of 4½c.

And yet in spite of that record, there are those who would destroy the confidence of the American people in this great industry—would fill their minds with the poison of prejudice.

What the public mind needs is a good dose of mental physic to purge it of its misconceptions and its political half truths.

What the industry needs is a fuller understanding of the people it serves, a keener sense of trusteeship in the service it renders, and a better means of letting its customers appreciate the richness of what they now enjoy at so little cost. The industry must learn to appeal to the customer in his language.

This last thought gives occasion for this paper *"How can they know?"*

In the spirit of more recent procedure let's come at the subject backwards.

I. First of All, This Business of Knowing

The industry's best hope lies in the people's knowing fully the facts with reference to electrical service, what it is and how it may best be supplied.

In these last half dozen years of crisis, clear, sane thinking has been difficult. Fear and loss and helplessness have made people ready listeners to opportunists, panacea dispensers, heroic straw-man conquerors, Utopia builders, and great share-the-wealthers who promise everybody a first grab at the new coin box.

We have been urged to believe that there are new recipes for all the old processes. And it is so hard for people to get at the facts. Naturally, as they have groped about in their doubt and despair, they have been lured by the siren calls of these opportunists of a new order. And certainly these men have made a great appeal. Standing with one foot on the prostrate body of business failure, they have cried a new hope in ventures which must be good—they have never been tried to be disproved. In the process they have set up all kinds of bugbears. Note these typical misrepresentations:

2% of the people own 90% of the wealth;
Business don't crowd into Town X—
because electric rates are too high;
Electricity can be produced for 5 mills—
it's criminal to charge 5 cents for it;
Business should be run without profit.

Only a Knowledge of the Facts will dispel these errors. "Truth is mighty and will prevail" is still true, but the truth has to be known to be effective.

To illustrate: It's strange how widespread has been the echco—2% own 90% of the wealth; no data—just a conclusion—the plainest kind of hooey. And yet what prejudice it has formed.

How facts give the lie to the generalization.

If the national wealth may be approaching again its 1929 $450,000,000,000 estimate, note this distribution:

Homes	102	billions
Farms	58	billions
Personal Property	49½	billions

Retail stores	9½ billions
Business Buildings	23 billions
Public Buildings	27½ billions
Public Utilities and Transportation	63 billions
Manufacturing	42½ billions

"About 72% of the nation's wealth is held by ordinary individual owners."—Cameron.

Homes valued at 102 billions. No 2% own 90% here.

Farms valued at 58 billions. Try the 2%-90% formula here.

Even the great corporations are owned by millions of bondholders and stockholders with a distribution which even in this classification makes the 2%-90% claim ridiculous.

Who after all enjoy the things that really make America rich?

Or consider the location of industries. A careful study made some years ago reveals the following factors:

Reasons for Locating Industries

1. Proximity to market.
2. Labor conditions.
3. Cost of transportation of raw materials and finished product.
4. Availability of materials.
5. Available factory building and site.
6. Personal reasons.
7. Cost of power and fuel.
8. Cost of land.
9. Grouping of related industries.
10. Living conditions.
11. Financial aid.
12. Taxes.
13. Mergers and consolidations.
14. Cheap land.
15. Near parent company.
16. Banking facilities.

To ascribe all-important significance to power is to shut one's eyes to the facts.

The 5 mill-5 cent spread in the cost of production and sale price of electricity propaganda is another case of misinformation or total lack of understanding. Bus bar cost is an entirely different thing from service under the additional costs of *transmission, distribution, accounting, collecting,* etc. This spread, held up as unrighteous profit, is the inevitable cost of doing business whether in the marketing of lettuce, the selling of capsules, or the running of a taxi. The spread exists in the field of every opportunist who so loudly cries out against the utilities. He just hasn't been made conscious of it and it has escaped the layman in his listening to the calumnies of the power trust.

The hope of all institutions lies in making sure that people come to grasp a knowledge of the fundamental principles of sound business. That is one of the requisites of an *enlightened democracy.*

II. Let Us Proceed to Consider the Second Term in Our Backward Analysis—They—The People

There is nothing strange about them. They are just like us. In fact, we are they. Altogether we are the people. Fundamentally we are all actuated by the same common impulses. Men still respond to the basic urges of the race: fear, love, hate, curiosity.

Americans, I am convinced, want to be fair.

But they have to form judgments out of the material at hand.

In a day when millions of men have been out of work and others fearful that they might be, it has been only natural to lay the cause of that unemployment at the door of someone who could be hated. People love to fix the blame for scandal and calamity. With people in that frame of mind along came the opportunist to place the charge of responsibility against Big Business. Ever since, the utilities have been on the spot. We are learning the full significance of the statement: "It isn't what's true" that counts so much as "what the people think is true."

Barnum, of course, insisted that people love to be fooled. I don't believe that, but I am sure that in distress they reach out after any prospect of hope. But in the long run people can be led to sensible conclusions.

Ten cents a day for the electric service of the average home in America—the price of a couple of coca-colas—wouldn't normally lead to revolution. But our customers have been told that part of the ten cents is a steal. People hate to be gouged. It is the principle of being held up rather than the amount involved that creates the stir. Time and the facts will get the answer.

Our responsibility it is to see that they get the facts.

III. And That Introduces Our Third Term "Can"

Is it possible to get these facts into the minds of people?

My best answer to that is that it is being done. The opportunist certainly has succeeded in registering his half-truths. The same amount of effort ought to establish full truths.

But your opportunist brings to his task a devotion and an enthusiasm heretofore not found in our utility appeal. We have been busy on problems of engineering, sales and accounting. We have not yet been willing to recognize that this human problem is the biggest problem before the industry. Our fate rests with the people. If we can't inform them we can't hope to have them sustain us. *An intelligent mass response is the hope of democracy—it is our only salvation.* It can be secured if we really go about it in full-hearted earnestness.

IV. And that Leads Us to the Last Term of Our Title "How"—the Real Burden of This Paper

May I offer you briefly the outline of a plan which seems to have helped in better equipping the employees of our company to pass on to our customers helpful suggestions relative to the fundamentals of public utility practice?

Limitations of time make possible only the presentation of this past year's work.

Nothing in this discussion is intended to minimize the value of a vigorous newspaper program of institutional appeals. The same goes for billboards and radio. I have felt for years that our industry loses tremendously in not having a national voice on the air. What a man with a following like Jack Benny's or Graham McNamee's could do in the name of popular understanding and goodwill.

Four years ago we laid the foundation in a course on the historical development of the company, reinforced by a geographical background of plants, lines, and load.

It is stimulating to employees to be familiar with the system which lies behind their work and the range of customers whom they serve.

Three years ago we were all occupied with a major municipal plant election and an intensified drive for reduced rates. Both of these issues called for a rich background of material equipped with which employees did yeoman service in holding the fort.

Two years ago national issues occupied their attention.

Making Friends Through Improved Service

This last year we carried forward what we think has been our most constructive course to date: *"Making Friends Through Improved Service."*

Purpose

The purpose of the course is expressed in the Foreword to the year's work:

"Circumstances of the past few years have forced the Company largely into a defensive position—we have been fighting for our very existence—and of necessity, our Employee Information Programs have been of informational, statistical character to equip us to combat attacks. The efforts we are capable of putting forth—and gladly would have put forth—better to serve the public and extend the outstanding benefits

of electrification to home and industry, have all too frequently been seriously interfered with.

"The time has now come for us to reach out on a constructive program. It will be stimulating to analyze and appraise our jobs and our performance as laborers, linemen, metermen, salesmen, clerks, engineers, accountants, foremen, superintendents, etc., with an aim to improvement, and with particular attention to 'Making Friends Through Service.'

"*Improvement* is the key to progressive development.

"*Improvement* is conditioned upon *daily performance of the work in hand.*

"Mere practice does not make perfect. Experience of the wrong kind can become a liability rather than an asset.

"*Performance* needs regular proof reading.

"A careful, systematic analysis of what we habitually do may help all of us improve.

"In all of the fields of our activities we meet people. It is true that in some of them the human factor is encountered more than in others, but whatever we do, peoples' interests lie out at the other end of our job. Our task is to meet the needs and satisfy the reasonable expectations of our customers. After all, we exist to serve them, and our success is measured by their satisfaction. What they think—how they feel toward us—is really the best measure of our performance. Our task, therefore, is not only to understand our own business—it involves also our understanding of people—their rights, their needs and their wishes.

"There is no simple recipe which can be memorized and made to apply to all situations alike. People vary. They are different in mood, in training, in experience. Then too, problems vary. Almost every situation has some little feature in it which is unique. People generally want to be fair. They often suffer from lack of information or from misinformation. People, both employees and customers, often appear pronounced in their prejudices because they think they have been treated unjustly. Our business constitutes a wonderful laboratory in which we can come to understand people better.

"In nineteen hundred years business has discovered no better principle for getting along with people than the Golden Rule. It is as effective today as it was those many years ago. It is an ideal which challenges all of us to our best performance. The effort to approach it constitutes a fine experience.

"A season devoted to 'Making Friends Through Service' will no doubt incline us to make the slogan permanent.

"This Information Program is developed to fit us the better for the opportunities which will present themselves.

"More specifically:

1. To provide employees, stockholders, and customers with full and complete information regarding the Company.
2. To give them an opportunity to ask questions about the Company.
3. To clear up misunderstanding or misinformation resulting from unfriendly propaganda.
4. To receive suggestions whereby the Company may render better service to customers, employees and stockholders.
5. To receive suggestions regarding new industrial and economic developments that may be exploited for mutual benefit.
6. To cement the ties of friendship among patrons, stockholders, and employees.

Organization

"As heretofore, the employees of the Company were organized in groups of about twenty, each group meeting once a week, preferably during working hours, under the supervision of a group leader. Meetings of group leaders were held in advance of the group meetings for the discussion of materials, questions and results secured to date. Group leaders were provided with a handbook containing all necessary outlines and materials. The groups in general followed the outline given to group leaders. Each employee received a brief outline of the program. The division or department head organized the various groups and provided the group leaders with a class roll. The group leader had full responsibility for the conduct of his group, advised members of the time and place of meetings, kept an accurate roll, distributed materials and provided a substitute group leader when he was unable to be present at any meeting. Forms were provided for group meeting reports. These were filled out by the group leader and forwarded to the division or department head, who in turn forwarded them to the General Office. Information required to keep the charts and other materials up to date was provided from time to time."

Sixteen meetings of each group were held.

Subject Matter and Method of Presentation:

The foundations for the course were laid:

A. By turning through with group leaders Milton Wright's book "Getting Along With People."

B. By pooling the judgments of employees on what are the most important factors in building friendly relations. Their forty-one home-made suggestions became the common property of all employees. The following generalizations are typical:

1. Give the customer the service he is entitled to—with heaping measure.

2. Put the customer at ease and let him feel that you are interested in his welfare:
   Offer him a seat.
   Let him talk.
   Be willing to listen.
   Take interest in his problems.
   Be complimentary.

3. Admit something, including the possibility that you might make mistakes.

4. Avoid direct contradictions and positive assertions. "Win an argument and lose a friend."

5. Get full particulars and facts before drawing conclusions or making decisions.

6. Make the customer feel that he has a bargain in his electric service and electrical purchase.

7. Good manners:
   Courtesy.
   Thoughtfulness.
   Sincerity.

8. Make yourself agreeable.
   Create confidence in yourself, in the Company and in the service.

9. Know your own business and what you are doing.

10. Know your Company, its departments and its personnel.

11. Be fair.
   Treat all customers alike.
   Give the customer a square deal, and see that he knows he is getting a square deal.

12. Be clear.
   Be sure the customer understands. Make a simple explanation. Avoid technicalities.

13. Be prompt.

14. Be honest.

15. Be considerate.

16. Be fair to the Company.

17. Don't bring into discussions with customers inter-departmental business or difficulties.

18. Confine yourself to the problem in hand.

19. Get on a friendly basis with customers during and outside of working hours.

20. Treat each problem individually and on its own merits.

21. Be interested in club, church, civic affairs and build a standing in the community as a result of service to some cause.

22. Remember that "a man's home is his castle."

23. Consider customers' feelings, prejudices, etc.

24. Use tact and care when transferring or referring customer to some other department or employee.

25. Settle as much as you can while the matter is "hot"—but remember that some situations require reflection. Time is a great healer.

26. If the customer has already had satisfactory business relations with another employee, let him handle the case if practicable.

27. Try to build on the good will some other employee has built up.

28. Beware of crossing lines with other employees or departments.

29. Employee first contacted should check back with customer to make sure that customer has been taken care of.

30. Create confidence.

31. Don't gossip.

32. Keep confidences.

33. If you haven't a good reason for saying something—skip it.

34. Boost the other fellow's business and cooperate with him.

35. Don't bluff.
   The best answer sometimes is "I don't know."

36. Serve all alike.
   Don't discriminate in favor of important and influential people.

37. Plan conferences in advance.

38. Fulfill your promises.
   If some other individual or department is involved in a deal, check with them before you make promises.

39. Be informed on current affairs, national and local.

40. Handle every transaction with a customer with the thought in mind that you are going to win or keep a friend.

41. Make it easy for the customer to back out of an awkward complaint or situation.

Upon such a foundation, the Case Method was followed in a consideration throughout the sixteen weeks of some eighty cases drawn from actual experiences out of every department of the company involving transactions between employees and customers.

A few typical cases will illustrate the scope of the work and will hint the method followed after the actual situation was presented:

Case No. 2

Customer: "My bill is too high."

Cashier: "Well, the meter reader or clerk probably made a mistake; that often happens."

What would you have said and done in this case? e.g.

1. Told the customer he was mistaken, and tried to prove it by argument?
2. Admitted the possibility of an error and arranged for a check of the meter reading and billing?
3. Invited the customer to sit down and talk the matter over?
4. Obtained from the customer all possible facts regarding the lights and appliances, and their use during the billing period. With this information, and the customer's account for some time past, having due regard for the season of the year—and with the customer's help—prepare an estimate of the probable use. Compare the estimated figures with meter reading.

Use some other procedure—explain.

Which of the 41 factors listed in Employee Information Program would you endeavor to apply in this case?

Case No. 17

One of our home lighting specialists sold a good lighting job in a certain residence. Some months afterward, a service man was called to the home to repair a range. As he was about to leave, the housewife asked him if he would look over the lighting and see if he could see why the bills were so high.

What was the best procedure for the service man to follow?

1. He may have said that he didn't know anything about such matters.
2. He may have said that he would ask an expert in such matters to call.
3. He may have looked over the lighting and commented upon how pleasant it must be to enjoy such a beautifully lighted home.
4. He may have said "It's no wonder your bill is high when you burn so many big lamps," etc.
5. How would you have handled the case?
6. Is your own home well lighted?

Case No. 25

Mrs. H called at the office to complain about a $4.50 charge for a new dolly for a washer. She objected to paying this, because service man B, who had called to investigate, had said that the old dolly should have lasted much longer than three years, and that it was evidently defective in the first place. Mrs. H said also that this was the third time she had come into the office to adjust this matter, and that she was tired of being put off with the statement, "We will look into the matter and see what can be done."

Her account was credited with $4.50, although the dolly replacement was made long after the guarantee period.

Analyze employee performance in this case.

1. Service man B.
2. Office employees contacted by Mrs. H. on the two previous occasions.
3. Employee who finally disposed of the case?
4. Was the final adjustment fair to the Company?
5. How would you have handled the case from the beginning?

Case No. 27

A customer living several miles from the office phoned that her range had "gone bad" just as she was getting supper. She had just got back into her kitchen when the service man came to the back door to repair the range. She expressed surprise that he had answered so soon after her call. He explained that after completing another job in the neighborhood he had telephoned back to the office and learned of her difficulty. She complimented him and the Company highly, and never overlooked an opportunity to tell her friends of what she termed "fire department service."

Analyze employee performance in this case.

1. What part did planning and organization have in this satisfactory performance?
2. What do you think of the idea of using customer's private telephones to report back to headquarters or transact other company business? Advantages? Disadvantages?

Case No. 28

A meter reader entered a rooming house without knocking. The woman who operated the establishment heard him start up the stairs and called to him to clean the mud off of his feet. This he did. He read the meter and on his way out called to her, facetiously, to come and see if she could see any muddy tracks. This angered the woman, and she called on the Division Manager.

Analyze employee performance in this case.

1. Select from the list of 41 factors, those which may apply to this case.

Explain your selections and their application here.

Case No. 30

A Production and Transmission Department employee went to a barber shop for a haircut. The barber complained that at times the voltage was so low that the clippers would not work satisfactorily.

What would you have done?

1. Said that the matter was not in your department.
2. Told the barber to complain to the division office.
3. Taken the barber's name and address and yourself followed the matter with the division.
4. In view of the fact that the matter is not in your department would you feel any responsibility whatever? If so, where would your responsibility end?
5. Should customers be expected to know all about the Company's internal affairs, the functions of various individuals and departments, etc?

Case No. 50

Stockholder: "I don't see why you can't pay dividends; my bill is just as big as ever!"

How would you answer?

Responsibility of Group Leaders

The performance of group leaders largely determined the degree of success achieved in these discussions. "As with the leader, so with the group." Whenever the discussions were dynamic and thoughtful they were so largely because of the leadership. It was the responsibility of the group leaders to build interest among group members, to lead them out into an active, constructive discussion of the problems vital to our business. Group leaders had the opportunity, aye, the obligation of stimulating study, of fostering discussion, of directing that discussion toward the basic objective of the course and of enriching the discussion by bringing in pertinent materials which regularly grow out of experience.

As a result of the year's work, I am sure that employees have a better understanding of company business than ever before. They are more appreciative of what other employees have to do and the importance of mutual cooperation; they are more aware of the institutional value of friendliness; they know better how to get along with people.

If each of the 2000 employees of our company has dealings with 10 people a month, that's 20,000 a month—240,000 a year. At the same rate the 250,000 employees in the nation's electric utilities could contact 2,500,000 a month—30,000,000 a year.

How can they know?

Enthusiastic, well-informed employees are the answer!

> "Truth crushed to earth will rise again; the eternal years of God are her; but error wounded writhes in pain, and dies amid her worshippers."—Bryant.

The Thomas Alva Edison Foundation National Campaign

By Walter F. Mallory*

THERE is no more dramatic story in the history of industry than that of Edison, his life and inventions. The part he played in his untiring search to satisfy the most urgent needs of humanity and the part his inventions played in the development of great new industries is one of the most astonishing things in the history of mankind. From his brain came more for human happiness and comfort, more for the economic welfare of our nation and for general uplifting of the standards of civilization, than from any other man who has ever lived.

It is high time that there should be national recognition and acknowledgment of our debt to him. But for the economic conditions through which we have passed, some National memorial would long ago have been created. Soon after his death, many proposals came from his friends and others, but most of them were of a commercial nature. The Thomas Alva Edison Foundation was incorporated in June of last year by the Edison Pioneers, which is a group of his former co-workers and by the American Institute of Electrical Engineers, who felt that recognition could be postponed no longer. With the cooperation of various other organizations linked with the electrical industry whose representatives are now Directors of the Foundation, plans were made for a commemorative campaign in which the entire nation might participate and in which the Foundation hopes that the great industries, which owe their very

MR. MALLORY

*Secretary and Director of the Foundation, New York, N. Y., and Forty Years associated with Edison.

An Address before the Second General Session of the Fourth Annual Convention, Edison Electric Institute, St. Louis, Mo., June 2, 1936.

existence to Edison, will play a leading part.

No material monument could by itself ever fully express the nation's tribute for all that Edison did and for all that he was. The Foundation felt that the most enduring and appropriate memorial that could be erected to Edison must be one which reflected his vitality of spirit which was, I think, as one who knew him very well, his most outstanding quality. It was typical of his kind genius that his life was never too crowded to pause and give encouragement to youth. At the age of eighty this interest became focused in the character, mental and educational tests he devised which led eventually to the selection of the first Edison Scholar from over 100,000 applicants.

The Thomas Alva Edison Foundation, therefore, has planned to create a living memorial to Edison by the creation of 100 annual monetary grants to promising young men and women of special aptitude in industrial science, who would otherwise be denied the opportunity for proper development. One of the most interesting things in this Edison Scholar plan is that the lack of scholastic qualifications will not be a barrier to applicants. In this way it differs from the ordinary scholastic awards. The Foundation is especially interested in encouraging talented young men and women who are now working in industry. It is proposed that this type of candidate shall be nominated by the industries, for the big industrial organizations know who their most promising workers are. A second class will be youth in colleges or post-graduate courses, to be nominated by faculties on the basis of previous attainments in research, laboratories or technical schools. There will be a third class of unattached working youth wherever found. The grants will have no uniform values nor be spread over any predetermined length of time. They may be made to successful candidates in the place where they are then working, the plan is to place them where they can find the best possible research facilities and counsel for developing their ideas and experiments to the practical stage.

It is hoped that each of your companies will contribute to this fund and that, of course, will be determined by each company. However, we feel that every official and employee should be given an opportunity through well organized efforts, to pay his or her tribute to the Father of your industry. Some companies are now organized on the basis of 5% of one week's salary.

In addition to the living memorial the Foundation proposes to erect at West Orange, New Jersey, a simple building to house the originals, replicas and records of Edison's inventions. It is proposed to preserve his famous library and laboratory. This Edison Center should make permanent the temporary beacon which he lit on the occasion of the Light's Golden Jubilee.

This, in short, is the program of the Thomas Alva Edison Foundation. The living memorial portion of this program is, I am certain, a plan which would have appealed profoundly to Mr. Edison himself.

(Editor's Note: Hitherto unpublished memorabilia of Mr. Edison related by Mr. Mallory will appear in a later issue.)

Address of the President

(*Continued from page* 205)

pany to another—and as soon as the new forces arrived they set to work with the same energy and determination as those already on the scenes. Emergency connections were made by means of which power was drawn from outside sources, in some instances quite distant points, to carry on for the stations which had been temporarily put out of commission.

Crews of experienced workers including engineers, linemen, cable splicers, and others, and carloads of cables, testing equipment and other vitally essential materials were shipped into the stricken districts by companies which had escaped the ravages of the flood or had suffered less than their neighbors. In short, the central station industry, from the highest officials down through the ranks to the humblest employees, marked up a noteworthy record of achievement which the country and the industry as a whole will not soon forget.

The growth of the industry during the past year has, I think, been phenomenal under the conditions that have existed. I will not burden you with a repetition of statistics, with which I think you are all familiar, but the record is one of achievement and of progress, and is very promising for the future. If we could be permitted to devote all our energies to the development of the Electric business, reasonably free from political and governmental attack and opposition, there is no telling to what limits the expansion of the industry would go.

The two years that it has been my privilege to serve as your President have constituted a time of great strenuosity. The Presidency of this Institute, in times like the present, is a serious, nerve-racking undertaking. If I have been able to be of any help to the industry, I am very happy. And I trust that you will all overlook my shortcomings, whatever they may have been. I have at all times had the complete and cordial cooperation of the entire working personnel of the Institute, whose efficiency it is a pleasure to recognize.

It had been my hope, during my administration as President of the Institute, to visit the membership of the Institute, some of whom I think rather rightly feel that they are remote from its daily activities. I had hoped to "swing around the circle," as it were, not only for the purpose aforesaid but also for the purpose of presenting to such persons as our membership in the different localities might desire me to meet, the real motives and purposes that actuate our great industry. But in the stress that we have been through it simply has not been physically possible. In 1912, as President of the American Electric Railway Association, in company with others, I conducted such a tour, which was highly beneficial, although as it has turned out, nothing could stop the downward trend of that particular industry. A good example of the benefit derived from such an effort is apparent from the work of the present President of the New York Stock Exchange, who has been all over the country, preaching the gospel of the faith that is in him. And our distinguished guest of today is doing a similar service for the great composite business union of the country, the United States Chamber of Commerce. I indulge the hope that the new administration will have the inclination and the opportunity to undertake some such endeavor. It would be time and money well spent. I am now laying down the duties of this office, but I pledge to my successor, when chosen, my fullest cooperation and the fruit of my experience.

Fundamentals of Utility Accounting

Including a Modernization Program for Retirements

By Luther R. Nash

Vice-President, Stone and Webster Engineering Corp., New York, N. Y.

An Address before the First General Session of the Fourth Annual Convention of the Edison Electric Institute, St. Louis, Mo., June 1, 1936

A WELL-KNOWN industrial engineer recently expressed the opinion that we have become too expert in bookkeeping. The writer suspects that, in the light of recent developments, his associates on the Institute's Accounting Committee are heartily in accord with this statement if it implies that we may become so involved in technicalities as to lose sight of our real objectives.

The proceedings of this Institute and its predecessor contain many discussions of the industry's accounting problems. Their treatment of the fundamentals of accounting procedure have been so extended and so clearly comprehended by those directly concerned that a restatement or even a review ought to be unnecessary at this time. This paper and those associated with it have been prepared because proposals from without the industry for new systems of utility accounting have embodied such radical departures from existing methods and disregard of their basic principles as to call for a careful reconsideration of the whole subject.

Utility accounting differs materially from that required for other business, particularly in the prominence of its fixed capital and the relative unimportance of its inventories. Furthermore, under regulation, utilities have accepted certain special restrictions, such as definition of the character and scope of operations and the property devoted thereto, and limitations of income from which the wages of capital are paid. Nevertheless, the basic purposes of all accounting procedure, regardless of the character of business involved, are similar, including the recording of the receipt and expenditure of money. The utilities in which we are interested receive money mainly from two sources, investors and customers. Investors are concerned primarily with the prudent use of their funds, an adequate return thereon, and their repayment if or when due. Customers are concerned that

MR. NASH

their revenues are used efficiently to provide the service which they may demand at any time and to keep in good operating condition the property through which this service is furnished.

Accounting records should trace in suitable detail all these funds from their receipt to their disbursement. Where long term expenditures are made for property, the records relating thereto should continue so long as the property survives. To the extent that expenditures made for property or services are represented by money, the accounts relating thereto should in general be set up and maintained to reflect actual cost to the accounting company. That it never has been intended that such records should represent value is evidenced by the published views of the outstanding authorities on this subject. Value is a fluctuating and elusive thing based on judgment rather than demonstrable facts. Books of account should deal with facts. These facts include not only the matters already referred to but also records of less permanent property such as supplies and merchandise, and such current transactions as accounts receivable and payable. Most of these records are well standardized and not controversial. Others are to be discussed in other papers on this program.

Utility Accounting History

The electric power industry is less than 55 years old. In its earliest years no uniformity in accounting methods was undertaken. Those in charge of the building up of this infant industry were more concerned with engineering and business problems than with accounting. The National Electric Light Association, however, gave early attention to this problem, beginning in 1901, and developed certain recommended standards. Revisions were made from time to time, notably in 1909 and 1914. General adoption of these standards was never accomplished for various reasons, including, in the earliest years, a feeling that such records were very confidential, and, later, the injection of regulatory views into the picture. The first complete prescribed systems of electric utility accounting with instructions as to their use and interpretation were issued by the state commissions of New York and Wisconsin in 1908. These systems were prepared after consultations with utility accountants, as were those adopted in due time in a considerable number of other states. Because of assumed local requirements or for other reasons they were, to a material extent, lacking in uniformity.

The inability directly to compare operations in one state with those in another finally led to the preparation of the Uniform System of Accounts which was approved in 1922. This undertaking had its origin in continued efforts of N.E.L.A. accountants to bring about standardization, and the authorization by the 1919 convention of the National Association of Railroad and Utilities Commissioners of a committee of their

accountants to confer with accounting representatives of the power companies to this end. These conferences began early in 1920 and continued for many months. Their aim was the development of a system of accounts adapted to both managerial and regulatory needs, with provision for such expansion as future growth might require.

After less than 10 years of use it became apparent that this Uniform System needed some modernization. At that time the accounting representatives of the commissions called upon the utilities to advise them of the changes which the industry itself thought were needed. A complete new classification was drafted by the National Electric Light Association in 1932, in cooperation with the American Gas Association with respect to common features, but the matter of revision was not then further pursued by the commissions. It is noteworthy that in all these efforts at standardization the initiative or burden of procedure devolved largely upon the utilities.

The matter was again taken up by the commissioners' national association in 1934 and its accounting committee was instructed to recommend a more modern classification for electric utilities. That committee accordingly prepared and presented such a classification for adoption at the 1935 convention. The industry was given no real opportunity to participate in its drafting, scope or arrangement in spite of repeated representations that a satisfactory classification could not be prepared without cooperative efforts of all those concerned. The 1935 convention of the commissioners did not adopt the classification recommended by their accountants and further efforts at modernization have been undertaken by the successor committee, again without such conferences and cooperation as were in evidence in connection with earlier similar efforts.

Restricted to written and formal presentation of its criticisms and suggestions, the accounting representatives of the industry, after weeks of intensive work for which they deserve great credit, prepared voluminous material in printed form and filed it with the commission accountants. A similar classification, prepared in the meantime by Federal Power Commission for use by interstate utilities under its jurisdiction, was given similar treatment by our accountants in a like inadequate time. The only direct contact between the industry's accountants and those representing the commissions with respect to the details of modernization was at a formal conference in Washington on April 13 and 14, 1936. At that time the industry representatives offered to furnish a complete classification embodying its present views. That classification has been prepared, but the offer has not been accepted.

Interested Parties

Utility accounting is of particular interest to three distinct parties: Management, regulatory authorities and investors. Management has a continuing interest in the results of the day-by-day operation of its properties as disclosed by accounting and statistical records, and has a direct responsibility to investors and customers for prudent and efficient operation. It must train its employees for their special duties and provide compensation commensurate with the ability and aggressiveness necessary to insure reliable service and to keep pace with technical developments applicable to the industry. It must see that its property is maintained in dependable operating condition and that retirement of its units is provided for by suitable reserves. It must study the growth of its property and business and make suitable provision for the future. It must see that capital funds are from time to time available for such growth, and to that end must maintain suitable credit through sustained income and adequate surplus. It must make continuing studies of rate forms and levels and the effect of changes therein upon volume and character of service. These and other obligations call for the continuous, careful scrutiny of accounting records.

Regulatory authorities make use of accounting records primarily for rate regulation and security issues. Such use is intermittent rather than continuous. The approval of security issues calls for a careful study of capital assets and liabilities at the time of the issue or changes therein since a previously approved issue. Rate regulation requires knowledge of capital investment, revenues, expenses, taxes and other charges for permanent upkeep of property which are disclosed by the accounts of the period under review. But regulation also needs other information which cannot be secured from accounting or statistical records. Such supplementary information calls for inquiry into business and economic conditions, character and condition of the property, its value as distinct from its cost as evidenced by price levels or trends, future business prospects, and possible effects of changes in rate forms and levels.

Investors are primarily interested in periodical statements of distributable income, accumulated reserves and surplus and their relation to their own specific investments. Such interest is ordinarily intermittent rather than continuous.

The customers of a utility are, of course, directly interested in its operations, but it is here assumed that they are protected or represented by the regulatory commissions. Such representation may also apply to investors as well as customers, but they look to management for more direct responsibility.

The foregoing discussion of the interest of these parties in accounting records is intended to indicate the relative accounting refinement which they may need. It should be clear that the requirements are in the order stated; that management with its continuous supervision and obligation needs greater refinement than either of the other parties. Logically, therefore, a system of accounts suitable for managerial purposes should meet all the requirements of regulation and provide more detail than is needed by investors. It also follows that any needed modification or modernization of an existing system of accounts should have most careful as well as initial attention by the utilities which have the most direct and continuing interest therein.

In spite of the interest of regulatory authorities in the accounting of the utilities under their supervision it should be obvious that such records are not intended and cannot be the sole basis of regulation, and should not be designed from that point of view. Regulation must consider many other sources of information unrelated to accounting records, some of which have already been indicated, and base important or even controlling decisions thereon. A system of accounts cannot be made a manual of regulatory procedure.

Accounting Refinements

The degree of refinement in primary or formal accounting as distinct from subsidiary records has been the subject of extended discussions whenever accounting design or modernization has been undertaken. As our business has grown and has become more complex our accounting refinements have grown proportionately. This may be illustrated by certain historical references. The initial accounting systems prepared and approved by National Electric Light As-

sociation in 1901 included 34 expense accounts and 13 fixed capital accounts. The annual revenues of the industry were then less than $100,000,000 or 5% of the present level. In 1914 this simple pioneer system had become outgrown and replaced by revisions, by prescribed state systems or other systems for utility groups, a typical one of which included 91 expense accounts. The Uniform System of Accounts approved in 1922 contained 161 expense accounts. The system proposed by the accountants of the National Association of Railroad and Utilities Commissioners in 1936 contains 177 expense accounts but with provision for territorial or other breakdowns which would vastly increase this number in actual operations.

The principle emboded in all these accounting systems is that adequate executive control requires a breakdown of divisible things into units or parts each of which is such a small percentage of the total that errors and irregularities may be minimized. Fuel is, of course, a large item but is not divisible as far as a particular source of power is concerned, nor would a breakdown be helpful if suitable records of unit consumption are regularly compiled. On the other hand, wages which constitute something like one-quarter of all operating expenses need and may readily have an extended subdivision in order to insure sustained efficiency. One of the recently proposed systems of accounts provides for a breakdown of maintenance into materials and labor. It is the opinion of the industry that such a breakdown offers no material advantage with respect to efficiency or adequacy of maintenance and therefore involves a waste of accounting service. The labor component may be derived from payroll records at little cost if or when needed for special purposes. It has also been proposed that independent records be kept of the operations of all different power stations, substations, etc., in a large utility system. To some extent and under certain circumstances such subdivision is desirable. Under other circumstances it serves no useful purpose, at any rate in a system of primary accounts. The typical electric power system has one or more modern stations which supply the bulk of its requirements and other stations which are operated only during seasonal or other peak periods or under emergency conditions. The output of these latter plants, which are usually small and relatively old, is a negligible part of the total system power requirement and a cost per kilowatt-hour of output of 4c. or 5c. is of no concern to management. A primary system of accounts should separate different kinds of generation, but subdivision among stations of a kind may properly be left for such treatments as each utility may find appropriate for adequate check of its production efficiency. Regulation is obviously less concerned with such a matter than management.

A uniform system of accounts should not impose refinements that are not generally useful but should leave to each utility the problem of adapting the standard accounting program to its specific needs through appropriate subsidiary accounts. The obvious inference from the foregoing comments is that any accounting refinement, the purpose of which is to save money in operation or construction, which in itself costs more than the possible resultant saving is not only superfluous but absurd.

Our refinement in fixed capital accounting has kept pace with that relating to operating expense as illustrated above. From the 13 fixed capital accounts embodied in the 1901 system already referred to, we have increased to 78 in the 1922 classification and 97 in one of the recently proposed systems without any of its numerous subdivisions. There is no question that subdivision of fixed capital into the major classes of property is desirable but further breakdown which has no continuous value should be questioned. One of the proposed breakdowns would provide separate property accounts for each community served. There may be some significance in this separation for regulatory purposes where rates lack uniformity in the different communities, but to the extent that uniform rates prevail such breakdown serves no such purpose. Even where different rates are in effect, a continuous segregation of property may be questionable unless it is physically isolated, because of the necessity in rate cases of allocating investment in production and transmission facilities. Such allocation will differ from time to time as load conditions or their distribution on the system change, and the solution of rate problems may not be facilitated by refinements in certain accounting factors which are impossible in others.

Without further illustrations, we may formulate a general rule that accounting methods applicable to all properties should not contain refinements which are not useful to all of them, but that further refinements should be adjusted to the needs of particular properties. Such refinements may be in part taken care of by grading the classifications in relation to operating revenues as provided in the present Uniform System. A further distinction should, however, be recognized, relating to frequency of use. Certain kinds of information may be needed only periodically. For example, certain rate or financing data may be needed only once in five years or thereabouts. To make regularly monthly accounting entries of this information for a five-year period, calling for 60 complete segregations, would in all probability cost considerably more than to develop the desired information from available subsidiary records at the time of the rate case. Any such information required only at intervals, which can be developed from subsidiary records at a cost not greater than continuous recording should for simplicity as well as economy be kept out of primary accounts.

Retirement vs. Depreciation Accounting

It is now in order to consider a special application or what may appear to be a modification of the accounting principles discussed herein. The present situation relating to retirement accounting warrants a careful review of this subject, and such a review is presumably the excuse for the preparation of this general discussion of accounting methods by an engineer who sometimes fails to distinguish between debits and credits.

It has been stated that the purpose of accounting is to record financial facts. While most accounting entries are records of facts, certain exceptions are commonly recognized. Equalization reserves are maintained, based on estimates, to take care of certain irregular charges, but these are commonly cleared or closely checked at annual or other frequent intervals. Certain reserves, however, run for longer periods. Among them may be included retirement reserves of the character provided for in the Uniform System on the assumption that they are intended to be equalization reserves and not to make more comprehensive provision for retirement liabilities. The judgment basis on which such reserves have been accumulated and the apparent wide differences in the expressions of such judgment have been the subject of criticism.

The proponents of the alternative straight line depreciation accounting method claim that such judgment should be replaced by a factual basis, and they

contend that the high degree of possible accuracy embodied in estimates of useful life of utility property affords such a basis. On this assumption they contend that detailed computations by classes or units of property based on such useful life will disclose the extent of annual and accrued depreciation in a form and with a degree of refinement and accuracy most appropriate for accounting records.

The soundness of this contention rests upon the accuracy with which it is possible to estimate useful lives. With a background of more than 35 years of intimate engineering, operating and supervisory contacts with public utilities, the writer is wholly unable to agree with such a contention, nor are any others having a similar background known to agree.

Much has been said and written about useful lives and this paper should not be unduly prolonged by further references thereto. It will, however, be appropriate to state that a careful study of useful life estimates embodied in published tables, actual utility experience, allowances of the Bureau of Internal Revenue, decisions of regulatory authorities, and other sources show wide variations which cannot be accounted for by climatic and other local conditions. Some years ago the writer made certain studies of the causes of retirement of utility property in widely separated localities covering periods of 20 or more years. More extended analyses have since been made by the Accounting Committee of the Institute. All these studies indicate that less than one-fifth of all past retirements were due to physical causes such as wear and tear, rust, decay, etc., the predominant remainder being due to non-physical causes including obsolescence, inadequacy and supersession.

The progressive effects of the physical causes of retirements are recognized, and useful life so far as determined thereby can be estimated with reasonable accuracy. Non-physical causes are not similarly progressive nor can their effectiveness be predicted with any approach to accuracy.

The preponderant cause of past retirements has been inadequacy due to the continued rapid growth of electric power properties. The industry as a whole has doubled its investment about every seven years. With the menaces of government competition, rate regulatory policies tending to lower levels of rates and reduced income, rapidly mounting and discriminatory taxation, and other discouraging influences, predictions relating to future growth are obviously nothing more than guesses.

The future effects of obsolescence are similarly uncertain. Our most important units of property are power stations. We have made radical improvements in efficiency and increases in size of units. Our engineers now tell us that future opportunities for improved efficiency are relatively small and that further concentration of production capacity is generally unwise. Our long experience with and increasing standardization of other units of property have led to greater ruggedness of construction, serviceability and longer life than the older types now being retired.

Other causes of retirement relate to municipal and other regulations which require placing wires underground, changes in street lines or grades, and other improvements and refinements in service. In view of the rapidly increasing burden of debt of municipalities and other governmental units and the future charges and taxes relating thereto, it may well be questioned if extensive programs of public improvements involving changes in utility property will be continued in future years.

In the light of these and other uncertainties as to non-physical causes of retirements and their predominance it has long been the writer's considered judgment that the best estimates which informed engineers or executives can make of useful life may be subject to plus or minus errors of not less than 50%. If such possible errors exist, any accounting entries based thereon are obviously not facts and they cannot be supported on that ground.

It is well known both from experience and mathematical computations that straight line reserves will accumulate over a period of years to very large percentages of total fixed capital. If properties have no growth and salvage value is negligible the reserves will ultimately accumulate to 50% of the investment in depreciable property. Growth such as we have experienced in the past causes a reduction in such percentage of maximum accumulation to something like 35%. No utilities have so far used the straight line depreciation method long enough to accumulate the maximum reserves which will some time be reached.

This method has been used by telephone companies for more than 20 years and their reserves have steadily increased to an average of about 25%. Such reserves have been subject to increasing scrutiny and criticism by regulatory agencies and the accruals based on detailed estimates of life and elaborate mathematical computations have been repeatedly reduced, arbitrarily or otherwise. Historical records of useful life have not been questioned nor have the mathematical processes based thereon, but it has, nevertheless, been the judgment of the commissions that the resulting reserves were excessive. Such judgments were confirmed by the Supreme Court of the United States in the Illinois Bell Telephone Company case decided two years ago in which it appeared that the reserves shown on the books of account were about three times the amount of depreciation, non-physical as well as physical, found by engineers who carefully examined the property. The court, in finding the existing straight line reserves excessive, referred to the basis on which they had been accumulated as "elaborate calculations which are at war with realities." This language seems to offer a comprehensive indictment of the whole program of straight line depreciation. The more recent decision of the Supreme Court in the St. Joseph Stock Yards case, dated April 27, 1936, fully confirms the Illinois Bell case, and cites it in support. If straight line reserves accumulated on utility books are "at war with realities" and are liable to be stricken down by regulatory authorities or courts, they are obviously not a proper part of an accounting program.

Even if such practical and legal objections to straight line depreciation did not exist there are other objections to certain assumptions associated therewith. There is the assumption that property is uniformly consumed in service during its useful life with a correspondingly progressive loss in value. It cannot be too strongly urged that books of account are not intended to record value but rather cost, and that value from time to time does not and cannot be made to conform to any mathematical rules. Value is measured by usefulness rather than age and is determined by economic forces unrelated to time. When a property ceases to be useful and is retired, its value disappears other than for possible salvage. It may be contended that value decreases as the probable date of retirement approaches. While this may be true, it cannot be reflected in

accounting records. That it may not be true is having repeated illustrations relating to power generating units. Many such units installed 20 or more years ago have been thought to be approaching the end of their useful lives although still in unimpaired physical condition. The availability in recent years of high pressure steam equipment has made it possible to superpose high pressure units on existing moderate pressure turbines thereby prolonging their useful life for many years with marked increase in overall station efficiency. This is but one of many possible illustrations of the uncertainties surrounding value.

That utility property is not uniformly "consumed" in service with a corresponding loss in value, as straight-line depreciationists contend, was clearly expressed by Mr. Justice Brandeis with the concurrence of Mr. Justice Holmes in a dissenting opinion in the United Railways case in 1930 (280 U. S. 234), in which he said:

"There is no regularity in the development of depreciation. It does not proceed in accordance with any mathematical law. There is nothing in business experience, or in the training of experts, which enables man to say to what extent service life will be impaired by the operation of a single year, or of a series of years less than the service life."

All accounting systems, regardless of their particular characteristics, provide for the retirement of property when it is no longer useful. It is for this reason that the industry adopted and still prefers the term "retirement" rather than "depreciation." The word depreciation has been avoided because of its many meanings, particularly the implication of loss in value which most of its definitions contain. It has already been made clear that accounting should not involve value or losses therein due to the age of property units. We, of course, recognize an accruing liability for retirements and its tendency to increase as property grows older, but any regularity in such increase is rejected as inconsistent with experience.

A study of the recently developed accounting systems which provide for straight line depreciation accruals indicates that depreciated original cost is a primary objective through which rates for utility service may be reduced. Such an assumption ignores many controlling decisions of the courts that accounting records are not a proper measure of accrued depreciation but that it must be based upon an examination of the property involved.

In other ways efforts to reduce rates through straight line depreciation accounting are illusory. Electric power utilities have so far made negligible use of the straight line method, and the reserves which they have accumulated are far less than the ultimate straight line accumulation. They are also less in most cases than the accumulations under the sinking fund method. Such reserves do not justify a depreciated rate base. If a utility having moderate reserves under the retirement method were required to change to the straight line method it would be many years before a complete straight line reserve would be accumulated. Until that time arrived it would be inequitable to deduct straight line depreciation from the value of the property in rate cases. That this is true has been recognized by proponents of the straight line method as illustrated by the following quotation from the report on the subject submitted to the 1933 Convention of the National Association of Railroad and Utilities Commissioners:

"Furthermore, during the transition period, when the retirement reserve is neither a true retirement reserve nor a true depreciation reserve, the treatment of such a reserve in finding accrued depreciation presents many complexities."

Even when at some distant future date a full straight line reserve had been accumulated there would be no advantage to customers over the retirement method as far as rates are concerned, for in the long run the higher annual charges for depreciation offset the advantages of a lower rate base. The purpose under any system is the retirement of property of a certain cost, and any sound method of accumulating this cost must have the same overall results as any other.

The sinking fund method, other than for its acceptance of the infirmities of useful life, is a more equitable and economically sound procedure but it involves objectionable accounting complications. An adaptation of the sinking fund method under which a reserve, whatever its size and however invested, is credited with its current earnings has distinct advantages in that, like a true sinking fund method, it avoids controversy over accrued depreciation.

We have seen that straight line depreciation accounting injects an objectionable degree of uncertainty and error into accounting records aside from its other undesirable features. Assuming that exactness in this matter is impossible, are there other methods involving less uncertainties which can be substituted without offsetting disadvantages?

A NEW RETIREMENT PROGRAM

The Accounting Committee of the Institute believes that, as a result of its recent studies, it has offered such a system to the industry as a constructive substitute for straight line depreciation which it has consistently opposed. This program is based on the assumption that retirement provisions can be more accurately determined by reference to the size of the accumulated reserve than by any estimates of annual accruals. Executives of the industry with many years of operating experience have formed fairly definite opinions as to the size of the reserves which their properties should have. They believe that the error in their judgment as to such size is far less than would be their error in estimating useful lives.

Having such procedure in mind, it is obvious that if existing reserves are low the annual accruals thereto should be increased and if they are already adequate no increases are needed and decreases may possibly be appropriate. This conception of a yardstick by which to measure retirement accruals is consistent with many findings of regulatory authorities and courts. We have already seen that excessive reserves have been condemned in many cases; in others, commissions have fixed specific limits beyond which accumulations should not go. If such definition of reserves is to become an established or recognized regulatory practice is it not logical that utilities should promptly conform thereto rather than to follow some other method which is doomed for rejection as soon as its results become apparent?

Executives will agree that while they can estimate the size of a reserve suitable for the normal requirements of their several properties, they might have some uncertainties as to the extent to which provision should be made for unforeseen retirements and contingencies. For such reasons the plan of upper and lower limits recommended by the Accounting Committee is preferable, the lower limit representing a minimum safe provision for known retirement needs, the upper limit including liberal provision not only for anticipated retirements but also such further allowance for unforeseen contingencies as may be appropriate in each case. Within these

stated limits the reserve would be maintained by accruals increasingly liberal when the reserve was near the lower limit, and restricted as the upper limit was approached. These variations in accruals might be in accordance with a definite rule or formula, or might be adjusted within reasonable limits as determined by business growth or lack of it, impending retirement needs, or other pertinent conditions.

Our program assumes that each utility would file with its regulatory commission a plan of retirement accounting, including the defining of upper and lower limits of the reserve and the methods through which the reserve would be kept within these limits. Most regulatory commissions would probably prefer that the limits in question be fixed as percentages of fixed capital, although there is no particular virtue in this basis where we are seeking only a definition of a boundary from which in most cases the utilities would hope to keep well away. It is suggested that percentages of operating revenues instead of fixed capital would yield percentages more nearly in agreement for properties of different kinds, and that thereunder growing properties, particularly with increasing load factor or saturation, would tend automatically to increase their reserves as their retirement liability increased because of such growth. While ordinarily a utility would build up a single reserve from one retirement expense account, the accounting system would provide for supplementary appropriations from surplus to meet extraordinary retirement requirements. Any such appropriations from surplus, suitably distributed, should, of course, be included in the cost of service on which rates are based.

It is intended that the reserve limits originally fixed may be changed at any time upon the initiation of either the utility or the commission. It is recognized that a cessation of growth in the future would require higher percentages of retirement costs in relation to present investment and therefore higher reserve limits. Any commission now favoring the straight line method or its equivalent should offer no objection to an upper zone limit corresponding with an ultimate straight line accumulation, and other commissions not so disposed should accept, if so requested, an upper limit corresponding to ultimate sinking fund accumulations, normally not much below 25% of fixed capital. While no attempt has so far been made to define either upper or lower limits in the recommended program, it is probable that for normal urban properties the latter limit should be not far from 10% of fixed capital or 40% of annual operating revenues.

The administration of a program of this kind requires an understanding cooperation between utilities and regulatory bodies with clear recognition that the primary consideration is the size of the reserve rather than the amount or form of current additions thereto. This is in sharp contrast to the straight line depreciation method which defines the rate of accruals and lets the reserve go where it will. The contrast is equally sharp between the complications and expense of depreciation accounting and the simplicity and economy of the proposed retirement program, the latter involving no sacrifice in either accuracy or adequacy of the results.

While the program bears the same name as the retirement provision in the Uniform System it differs therefrom in important respects. It may properly be characterized as Modernized Retirement Accounting. It is intended to provide reserves which recognize an existing liability for future retirements rather than for equalization only of retirement costs from year to year. The provision that accruals to the reserve may depend in part upon "available income" has also been omitted with the intent that flexibility, if availed of with commission approval, should not result in distortion, favorable or otherwise, of income statements.

The industry has realized that the flexibility in accruals permitted under the present retirement system has been subject to abuse and that criticism relating to such abuse was deserved. It should, nevertheless, be clear that if exact uniformity is looked upon as a means of assessing customers with their equitable proportion of retirement losses, it can never wholly accomplish that purpose. Under existing rate practices many customers fail to make any contribution toward other than out-of-pocket expenditures or do so only occasionally. Other customers may, or may not, make up the deficiency. There may be periods in the cycles of general business or of major property expansions when revenue as a whole is insufficient to provide for estimated retirement losses. In other periods the deficits may be made up. It is probably safe to say that no utility customer pays exactly what his service costs. For such reasons it is obvious that efforts toward exactness or uniformity may serve no useful purpose.

There has also been criticism of the inadequacy of existing reserves. The industry has not been unmindful of these criticisms, and it is noteworthy that during the period in which the Uniform System has been effective there has been an upward trend in the size of accumulated reserves and greater stability of accruals thereto. During the depression which started in 1929 electric utilities generally have maintained or increased their provisions for retirements instead of curtailing them as they might have done consistently with the intent of the Uniform System. Furthermore, it seems to be the general opinion of the industry that there should be further progressive increases in reserves.

With such increasing fidelity in the administration of retirement accounting and the gradual building up of the reserves thereunder, there appears to be no valid reason for abandoning the system for some radically different method. What is more appropriate is an evolution, such as is already in evidence, rather than a revolution. It is believed that a substantial proportion of the state regulatory authorities share this opinion. The recommendation of a new uniform system embodying straight line depreciation would not meet with general approval, and if such a system were adopted in some states it probably would not be in others. The confusion resulting from such disagreement might parallel that existing prior to the adoption of the present Uniform System when each state prescribed its own independent program.

Evolution Desirable

The foregoing statement that evolution is preferable to revolution applies not only to retirement accounting but to our entire system of utility accounting. Radical changes in styles or appearance of things are sometimes advantageous, and many people make their living from such changes. Accounting does not belong in this category. Unnecessary changes are a distinct disadvantage in that they interfere with comparisons of current periods with previous ones. Such comparisons are essential to adequate executive control of public utilities and they should be maintained in substantial detail. The writer clearly recalls the confusion resulting from certain past changes in accounting when these changes, particularly in expense account-

ing, were substantial. Comparisons other than for certain important items were restricted to large groups, and much important detail and opportunity for close supervision were lost.

The cost of utility accounting is by no means negligible. Utilities have been and are subject to acute regulatory or political pressure for rate reductions. Increased use of service without proportional increase in its cost has made many such reductions possible, but continuing increases in taxes and other exactions have necessitated continuous efforts for economy in every direction. Added and unnecessary accounting refinements would materially interfere with this program.

The astounding possible effects of such refinements warrant an illustration. A typical company in the Midle West has estimated the added complications of adopting in full a classification of accounts such as those recently proposed, including fixed capital and expense breakdowns, for the more than 400 communities served. This company now has on its books 348 primary accounts. Under the proposed system it would be required to set up approximately 55,000 such accounts. This is not an exaggerated comparison.

The cost of keeping these additional accounts is estimated to be equivalent to 0.75 cent per kilowatt hour for each such unit in the initial block of the company's residential lighting rate.

It is noteworthy that the classification recently prepared by our accountants as adequate for our present needs contains 234 prescribed accounts, as compared with 297 in the present Uniform System and 409 in the system recommended by commission accountants.

Consideration should also be given to the thousands of accountants who carry on the detail work on our records. Any change in methods calls for new instructions and more complete supervision, and radical changes mean a correspondingly complete re-education with its attendant expense. Even changes in titles without change in scope or substance of an account, such as is common in the recently proposed systems, lead to confusion. Where accounting changes are necessary, continuity of existing numbers as well as names should be provided as far as practicable to avoid unnecessary disturbance of accounting routine, and any new system should provide in its numbering and titling for future expansion with a minimum of changes. For reasons such as are here outlined there are distinct advantages in a gradual change from an existing program to an approved substitute program, these changes to be deliberately spread over a sufficient period of time to avoid confusion or excessive expense in any one year.

Finally, an accounting system, applicable to an industry as large and complex as ours, should assume a working knowledge of the art by those who carry on its details, and not burden its instructions with repeated statements of elementary principles. Furthermore, it should be assumed that accountants responsible for the entry of complicated transactions will know without recurrent reminders that explanations relating thereto, consistent with their importance, should be filed in each case.

In a book of instructions prepared in 1902 relating to a new system of utility accounting for the group of companies with which the writer was then and is still connected, there appears the following language, drafted by the late Guy E. Tripp, who was then also chairman of the NELA committee on uniform accounting:

"One of the objects of this book is to standardize these details, but we desire to do so gradually, without hardship to the companies."

The accounting system referred to had 34 expense accounts and 13 fixed capital accounts. In spite of the developments of the intervening years, the caution against radical and costly changes contained in this statement is as pertinent today as it was 34 years ago.

Present Day Financing

(*Continued from page* 212)

between operating companies and holding companies in the utility field, the former being pure and undefiled and engaged in a righteous service to mankind and the latter mere harpies, interested only in high rates and swollen dividends and unholy profits. If the operating companies are sound and good financially (which the census figures show that they are on the whole) it is by and large (except in a few large cities) the holding companies that have made them so. The public often does not realize the essential nature of the financial help the holding companies furnish to the operating companies because it has been done so efficiently and unostentatiously.

I have always felt and still do that the evils that have arisen in the past in connection with holding companies should be regulated by the Federal Government, but I object to the Alice in Wonderland method of "Off with his head," as the universal way of regulating matters. It is often easier to kill something than to regulate it but it is not always the most intelligent solution. Before the Government destroys the public utility holding companies, it should have a clear idea of how the function they perform can be performed by the small parts into which the "death sentence" would break up their properties. It should be sure of the answer it can make in later years to the consumer whose electric service suffers or fails for lack of equity financing. It should decide beforehand what it will say to the bond investor as to where he is to look for the protection of his bond. It should study carefully and with open mind, not blinded by hate, the figures I have given as to what the holding companies have actually done before ruthlessly destroying such a useful public servant.

Modernize—Electrify Your Kitchen

(*Continued from page* 235)

you a basic idea which you in your own territory can mould and adapt to fit your local requirements and necessities. You can accept or reject any portion of it. I hope you will agree that the promotion of kitchen appliances will be accelerated by a well coordinated nation-wide activity of this kind.

Again, may I urge you during the days of this Convention to discuss with others the methods and plans that have been prepared, to inspect the exhibits on display, and then to plan carefully how you in your communities can best take advantage of the program. The groundwork has been carefully laid and our excellent Headquarter's staff stands ready to help and advise you on the methods of procedure. Much printed material is available and travelling representatives are waiting to go to your communities to be of assistance. Certainly if the plumbers can put over a program of ensemble selling as well as they have, we, with even more at stake, can do it. From the results accomplished in the relatively short time that has elapsed since its inception, I can assure you that common-sense application of this Kitchen Modernizing activity will work. We can solve many of our problems and extricate ourselves from many of our troubles if we will build load fast by Modernizing—Electrifying Kitchens.

The Campaign to Destroy

(*Continued from Page* 216)

Rural Electrification Authority, the blank space to be filled in by the name of the state. The ordinary legislator would assume that the bill was for the purpose of bringing electricity to the farmers who do not now enjoy that service. The title and the name were conceived in low cunning because there is not a clause, sentence, or word in the bill about rural electrification.

The corporation would be managed by a board of three directors appointed by the Governor. The corporation is authorized to purchase real and personal property, build dams and power plants, transmission lines, market electric energy, and do any and all things which the Board of Directors may deem to be proper to encourage and promote the fullest possible use of electric energy by all the inhabitants of the state. It could invade any city or town and construct distribution systems therein without obtaining a franchise or other permit therefor from the governing body of such city or town or the inhabitants thereof. It could also run transmission lines along any public highway without obtaining a franchise or other permit therefor. The corporation would have power to borrow money and issue bonds, either general obligation bonds or revenue bonds, and sell such bonds to the PWA or any other Federal Agency, or otherwise, and without a vote of the people authorizing the issuance of such bonds. It is my information that up to date no state has undertaken to go into the electric power business either at wholesale or retail. I believe there is no state in the Union which under its constitution can go into the power business and issue bonds without the people authorizing the same at a general or special election.

Attempt to Circumvent State Constitutions

This bill is an attempt to circumvent the state constitutions by the creation, without a vote of the people, of a corporation owned by the state, which would have authority to engage in the electric power business in all parts of the state at either wholesale or retail. This bill is a scandalous and autocratic undertaking on the part of the favorite Cabinet Officer to undermine democracy in the several states. This bill was introduced in the legislatures of twenty states and it is my understanding that it was defeated in each of said states, except that it was materially amended in one or two legislatures and as amended was passed. It is evident that the people of this country are still opposed to any such ruthless and autocratic attempt to destroy the democratic form of government in the several states.

You are painfully familiar with the Public Utility Act of 1935 (Wheeler-Rayburn bill), its death sentence, its attempt to usurp the functions of the states, its provisions which will put the utility companies to great and useless expense, its attempt to manage and control the activities of practically all operating companies in this country, the necessity for lawsuits to test its legality, the effect it has had in slowing up capital investments and construction; hence I need not make any special reference thereto.

When Demagogues Thrive Best

In this very brief summary of a few events I have undertaken to demonstrate that for the past three years there has been evolved and developed by the inner circle of the New Deal a plan or plans to hamstring, strangle and destroy all the electric utilities, big and little, in this country, with public ownership and political operation as the ultimate end in view. But we need not be disheartened. We know that demagogues thrive best in times of distress. We know that the American people are honest, fairminded and intelligent. We know that the American people, now as always heretofore, are opposed to government in business and that they are not likely to accept paternalism, socialism, fascism, communism, Hitlerism, or any other ism except Americanism. We know and our customers know that the electric service furnished by the utilities is the best in the world and that our customers get more real value for their dollars paid to the utilities than they get for any other dollars paid for any other commodity or service. Most of the states have efficient regulatory commissions, and when there are any complaints about services or charges the same may be, and are, readily and efficiently adjusted without expense to the customer. We know that there is, in fact, no substantial reason for Federal interference with, or regulation of, the utilities. We know that the value of the property of the utilities which is used and useful in the public service exceeds the sum of $12,000,000,000, and that such property is, in fact, owned by the public, as it is owned by several million persons who have invested their savings therein, and as well by savings banks and life insurance companies which have many million depositors and policy holders. And the utilities pay excessive and discriminatory taxes to the amount of about $300,000,000 a year.

Another Job for Executives

In the past the utility executives have felt that their sole function was to build power plants, transmission lines, and distribution systems, and to sell electric energy and give the best possible service at reasonable rates. Now it is apparent that they have another job. They must keep the public fully informed about the things I have mentioned and about all other matters in which the public may be interested and which have any relation to the utility business. They must do this frankly, accurately, fairly, courageously, and frequently — in fact, almost continuously. If they do, the demagogues will be compelled to hunt for some other political football.

Why the Farmer Is Increasingly Interested in Electricity

(*Continued from Page* 238)

returns. But here again you will meet the necessity of a long-time program for the simple reason that I do not believe anybody is going to rush the American farmer into debt.

As the farmer works into this new era of American agriculture, striving for greater income, better living conditions, wider markets, and more efficient, convenient, and profitable means of production, we find that his desires, aspirations, and methods of expressing the same quite generally parallel those of our own. He is ambitious, independent in thought and action, willing to work, jealous for his industry, and proud of his lot as an American citizen. It is no wonder, then, that he is becoming increasingly interested in the economic and social benefits which can be brought to him through the use of electric service. As day after day he observes with his own eyes the uses to which electricity can be put, so deeper and deeper grows the conviction that he will have it.

Firm Ratings as a Guide to System Loading and Design

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An address before the Third General Session of the Fourth Annual Convention of the Edison Electric Institute, St. Louis, Mo., June 3rd 1936

SELDOM in the history of the Electric Utilities has there been so much uncertainty as to the future and therefore such reluctance to increase the investment in their properties more than is actually necessary.

From the point of view of those who operate electrical systems this situation may be expressed by the continued urgence that the maximum output be had from existing plant before additions are made. The question for them becomes, "How far may a given system be loaded without undue hazard to equipment or to the quality of service to which the customer has become accustomed?"

From the point of view of those who are responsible for the design and coordination of the electrical system, this situation may be expressed by the question, "Having used existing plant to the safe maximum, in what direction shall new developments be carried to insure that the cost per kw of load carrying capacity be a minimum consistent with acceptable service?"

These questions depend for their solution on several factors and it is with these factors and their application that this paper is intended to deal.

It has been said that the operation of an electrical system consists in large part of the intelligent taking of chances and that certainly applies to the loading of it, particularly when it is considered that the maximum safe loading in any particular situation turns so largely on what emergency ratings one may count upon with a part of the equipment out of commission for repairs. Unfortunately there is often little agreement as to emergency ratings and not infrequently a dearth of knowledge. However, the problem is here and must be faced and where accurate knowledge is not available, intelligent approximation must be relied upon.

The intelligent taking of chances is also highly important in the field of system design. A system built to be

MR. DEAN

foolproof and to guard against every conceivable contingency is not only unreasonable from the point of view of cost, but is likely, if expanded indefinitely, to become unwieldy from sheer mass of detail and from operating complication. The clever system designer will fortify himself with a background of actual operating performance to insure that in setting his emergency conditions he will be spending money to guard against actualities and not against situations which rarely, if ever, occur.

Firm Rating Method

In considering the loading which may reasonably be imposed in any situation, the number of factors to be considered is rather large and it is difficult to keep these in mind and to give to each its due importance.

To aid in evaluating these factors, the method of Firm Rating has been devised. In any particular situation the Firm Rating may be defined as the amount to which the load may be increased before additional load carrying capacity must be provided. Its determination implies a thorough knowledge of load and system conditions and an understanding of the overload ratings of the various equipments which comprise the system.

Not only are Firm Ratings useful in setting the time at which additional load carrying capacity must be available but they are also valuable in coordinating the thinking and understanding within the operating organization. The very making of them requires that each factor be brought into the open and thoroughly discussed before an agreement can be reached, and that process "clears the air" and makes for smoother operation.

Firm Ratings come into play in system design in determining which of the several directions, along which expansion might be guided, will result in the lowest cost per kw of actual load carrying capacity.

Let us now see how the idea of Firm Ratings may be applied to the various parts of an electrical system.

In the field of generating capacity the Firm Rating idea works about as follows. Let us asume first a system having a single generating plant and few enough generating units so that their maintenance can be safely carried out in the off-peak season, thereby assuring that all units will be available during the peak season. If, now we assume the largest unit to be out of commission due to an emergency, the firm rating of a steam plant will be the maximum overload rating of the remaining machines as determined by boiler conditions, cooling water temperatures, and generator limitations; and that of a hydraulic plant will be determined by stream flow and storage conditions. It is usually necessary to test the various generating units from time to time to determine their actual overload ratings under the particular conditions. One is justified in assuming for emergency purposes the

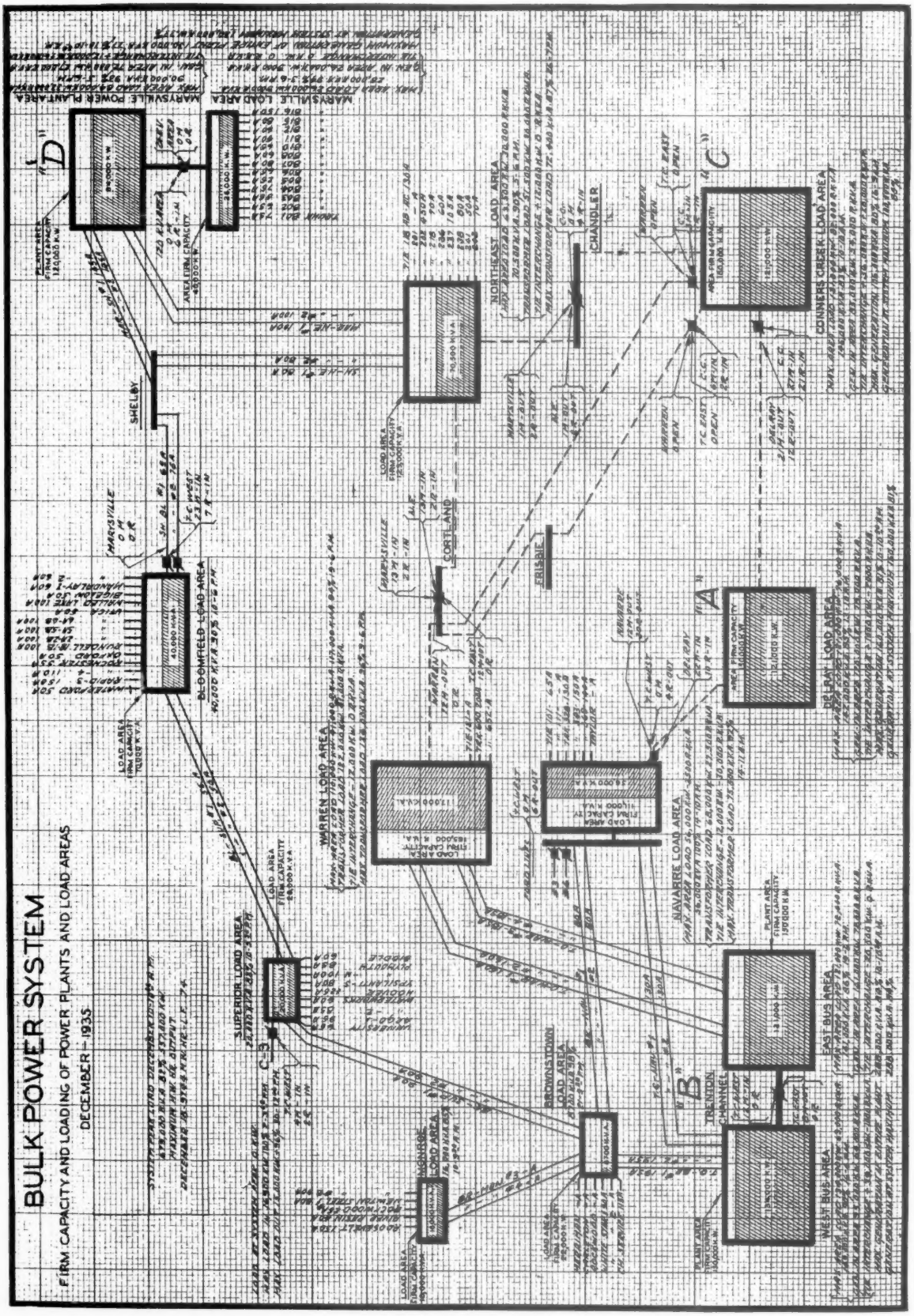
BULK POWER SYSTEM
FIRM CAPACITY AND LOADING OF POWER PLANTS AND LOAD AREAS
DECEMBER - 1935
MARYSVILLE LOAD AREA
MARYSVILLE POWER PLANT AREA
"D"
SHELBY
BLOOMFIELD LOAD AREA
NORTHEAST LOAD AREA
CHANDLER
CONNERS CREEK LOAD AREA
"C"
CORTLAND
ERISBIE
WARREN LOAD AREA
"A"
SUPERIOR LOAD AREA
C-3
NAVARRE LOAD AREA
BROWNSTOWN LOAD AREA
"B"
TRENTON CHANNEL
EAST BUS AREA
WEST BUS AREA

Figure 1

VOLUME

TABLE I

FIRM RATING OF TYPICAL GENERATING PLANT AND SYSTEM

Winter or Spring Condition

(Ratings in Megawatts)

Generating Plant	Boilers Total Number	Boilers Number *Firm	Boilers Firm Rating	Generator Ratings Name Plate	Generator Ratings Maximum	Generator Ratings Maximum Less Two	** Total Tie Line Rating	Plant Maximum Rating	Plant Firm Rating	System*** Firm Rating
A	5	4	*153*	160	172	64	60	153	124	744
B	13	11	*300*	300	325	215	75	300	290	748
C	12	10	200	180	*190*	100	70	190	170	743
D	8	7	*165*	160	169	85	70	165	155	753
Interconnections	...	...	...	25	25	...	...	25	25	...
TOTALS				825				833		

System Name Plate Rating — 825 MW
Minimum System Firm Rating — 743 MW
Minimum System Reserve — 82 MW (10%)

* Assumes normal boiler maintenance.
** One day maximum tie line ratings.
*** Assumes two machines out at the plant in question and all other plants at plant maximum.

maximum overload ratings because load estimates made a year in advance are usually liberal and peak loads are encountered on only a few days per year and usually persist only a few hours.

Where a generating system consists of several plants interconnected by inter-plant tie lines and the number of generating units becomes large, it becomes difficult to complete all maintenance work during the off-peak season. It may, therefore, be advisable to assume that one or possibly two units are out of service for maintenance work at the time of system peak and that another fails at that time and further, that two units may be out of service in the same plant. The firm rating of each plant then becomes the sum of the overload ratings of its remaining units plus the help which the inter-plant tie lines can bring in from the remainder of the system, including interconnections. The rating of the remainder of the system can, under such conditions, be considered as equal to the sum of the overload ratings of all its units unless there are some inter-plant tie line limitations.

Such an analysis of a typical large steam generating system might be as shown in Table I. It assumes as a maximum emergency, two large units out at peak load. One unit is assumed to be down for maintenance and another down from emergency causes, and both in the same generating plant. This assumption is made for each generating plant in turn and its firm rating set. Also a firm rating is determined for the system corresponding to each plant emergency and the minimum of these is taken as the system Firm Rating. While the minimum system reserve as shown above is 10%, the actual reserve under best conditions would probably vary over a period of years between 10% and 25% since capacity would probably be added in 50 or 60 mw units and account would have to be taken not only of the fully loaded system condition but also the case in which a new unit had just been added. Also, the load forecasts might be ample for any possible peak which also tends toward a reserve higher than is theoretically necessary.

An operating diagram showing firm ratings and loadings for a system similar to that covered by Table I is shown in Fig. 1. Note that the size of the squares A-B-C-D, which represent the generating plants, indicate their Firm Ratings and the cross-hatched portion their peak loads. The white area in any square is therefore the margin for growth in that area. Such a diagram is much superior to the usual nameplate rating diagrams because it indicates directly the load carrying capacity available for growth, thereby avoiding confusion and reducing the tendency to increase plant in advance of necessity.

Considering the generating plants from the design point of view, it is evident from the above that since the assumed emergency condition is based on a given number of the largest generators being out of commission, the size of the generating units chosen is an important consideration in determining the firm rating of system or plant. If they are large in proportion to the system, then the firm rating will be a smaller percentage of the nameplate rating than if the generators were smaller. On the other hand, the cost per nameplate kilowatt of generating capacity increases as the size of the generators decreases. There are therefore two conflicting tendencies which are not easy to evaluate. If it is remembered that the purpose is to carry the load at the minimum cost, it becomes evident that the criterion is the cost per kilowatt of firm rating. In general, therefore, that generating system is best developed in which the generating unit sizes are so chosen as to give, over a period of years, the lowest cost per kilowatt of firm rating.

In the field of transmission and substations the method of firm ratings is also readily applicable and useful.

Let us first take the case of the transmission stepdown station, that is, where the load center is sufficiently remote from the generating source to require high voltage transmission. The usual procedure is to assume the loss of the largest unit, be it line or transformer bank, and to base the firm rating on the maximum overload of the remaining units.

If that largest unit is a high voltage transmission circuit, the limitation imposed may be that of low voltage, and if so it is necessary to agree on a minimum allowable voltage for emergency conditions. Usually that voltage will have to be determined by the actual distribution circuit and regulator conditions in the load area served or it may be limited by a high voltage service to some large customer. No general rules can be laid down. Each case must be decided on its merits. Occasionally voltage conditions in some single distribution substation will sharply limit the minimum allowable voltage at the transmission substation. In such cases a moderate expenditure at the distribution substation

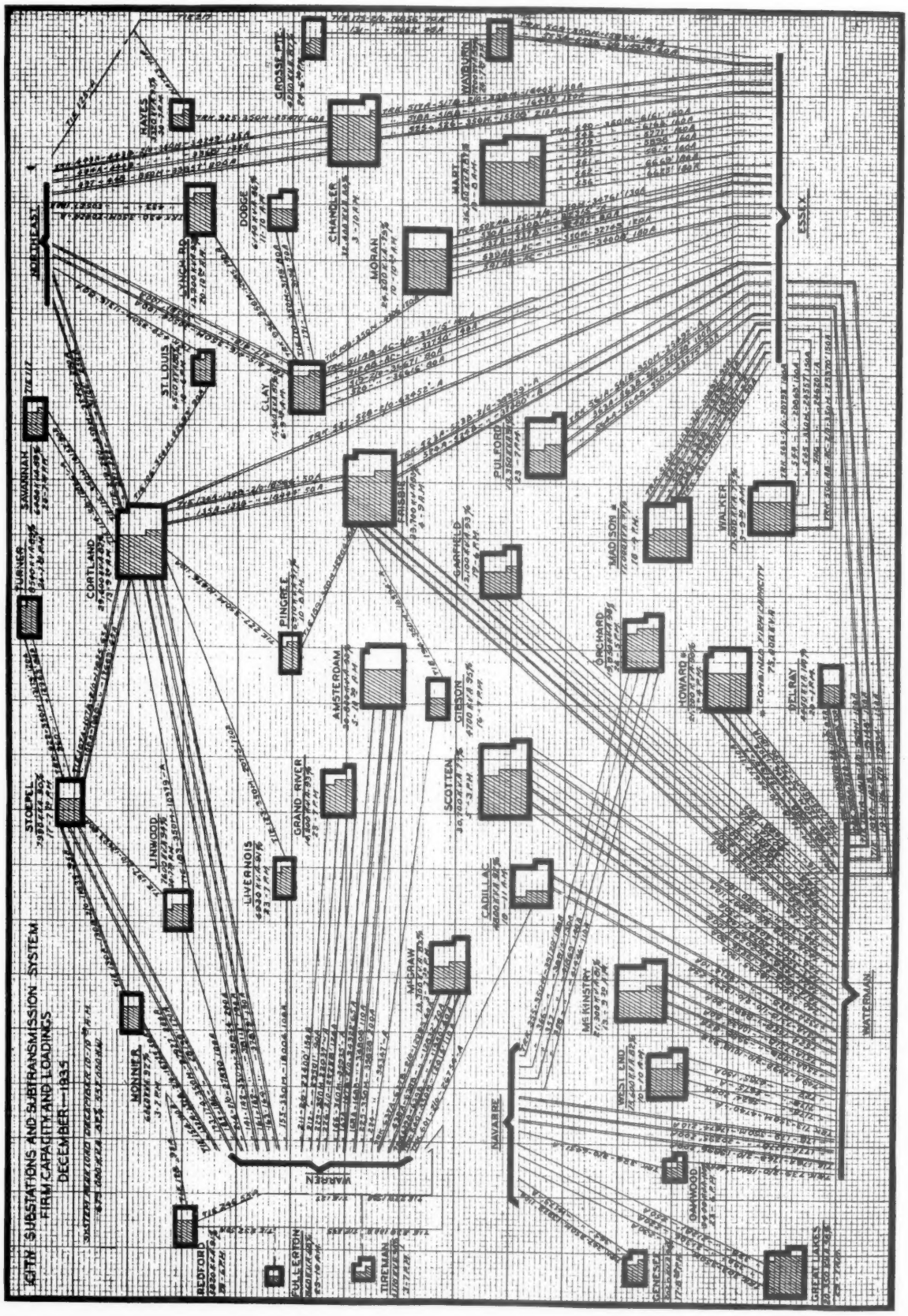
DETROIT SUBSTATIONS AND SUBTRANSMISSION SYSTEM
FIRM CAPACITY AND LOADINGS
DECEMBER—1935
NORTHEAST
HAYES
GROSSE PTE.
WAYBURN
DODGE
CHANDLER
MART
LYNCH RD.
MORAN
ST. LOUIS
CLAY
ESSEX
SAVANNAH
TUENE
CORTLAND
PULFORD
ERSKINE
PINGREE
GARFIELD
MADISON
WALKER
ORCHARD
HOWARD
DELRAY
AMSTERDAM
GIBSON
STOEPEL
LINWOOD
LIVERNOIS
GRAND RIVER
SCOTTEN
CADILLAC
NONNEA
McGRAW
McKINSTRY
WEST LINE
WATERMAN
NAVARRE
WARREN
OAKWOOD
GENESEE
REDFORD
FULLERTON
TUREMAN
GREAT LAKES

Figure 2

TABLE II

RATINGS OF 24-KV THREE-CONDUCTOR CABLES

Summer Schedule (May 15 to Nov. 15)

	Cond. Size	Normal Loading		Emergency Loading One Day		One Hour		See Note*
		Amperes	Kva	Amperes	Kva	Amperes	Kva	Amperes
Inter-plant Tie Cables and Cables Feeding Industrial Substations	350M	240	10,000	280	11,640	530	22,000	200
(75% Daily Load Factor)	2/0	140	5,800	160	6,650	275	11,400	115
						Peak During Lighting Period		
Cables Feeding Residential Substations	350M	260	10,800	300	12,470	445	18,400	220
(60% Daily Load Factor)	2/0	150	6,250	175	7,275	235	9,750	125
Winter Schedule (Nov. 15 to May 15)								
						One Hour		
Inter-plant Tie Cables and Cables Feeding Industrial Substations	350M	270	11,200	305	12,680	540	22,400	235
(75% Daily Load Factor)	2/0	155	6,450	175	7,275	285	11,850	135
						Peak During Lighting Period		
Cables Feeding Residential Substations	350M	290	12,050	320	13,300	455	18,900	255
(60% Daily Load Factor)	2/0	165	6,850	185	7,690	245	10,150	145

NOTES:

* Allowable load previous to application of One Hour or Lighting Period Rating, causing copper temperature of 50° C.

Above data cover six cables in 3 x 4 duct, each normally loaded, or for One Day ratings one cable carrying emergency load with remaining cables normally loaded. For the One Hour ratings up to four cables may be so loaded in a single duct bank.

Normal loading to give Copper Temperature of 66° C; Emergency Loading; One Day 85° C, One Hour 90° C.

may result in a desirable increase of Firm Rating at the transmission substation.

If the largest unit be a transformer bank, the safe overload rating of the remaining transformers is the limiting case. Here a careful study of typical daily load cycles to determine the duration of peak loads and to take maximum advantage of the infrequency of peak load days as well as a study of the season during which the peak loads may occur and the probable ambient temperatures will often pay excellent dividends in firm ratings by insuring the maximum allowable emergency rating of the transformers. Overload ratings on straight self-cooled or water-cooled transformers will range from 10% to 25% and on self-cooled transformers with emergency air-blast or water-cooling from 30% to 50%.

If the limiting case is the loss of interstation ties, the limit may again be voltage regulation, or if they be cable ties it may be the thermal limit of the cables. If the thermal limit applies, again a thorough study of maximum one day ratings pays excellent returns. Cables and duct banks can safely carry surprisingly large loads for a few hours on an occasional peak day, particularly in the cooler seasons. Table II illustrates the results of some 24 kv transmission cable rating studies which take account of ambient temperatures and load cycles.

The rectangles in Fig. 1. other than A-B-C-D show the firm ratings of some typical transmission stepdown stations. The cross-hatched areas show the peak

TABLE III

TYPICAL EMERGENCY OVERLOAD CYCLES FOR A DISTRIBUTION SUBSTATION STEPDOWN TRANSFORMER

600 Kv-a Transformer, Three-Phase, Self-Cooled

Emergency Load—Once a year without material injury

30°C Ambient

Industrial Load	Residential Load
3850 Kv-a—16 Hours	2750 Kv-a— 9 Hours
7700 " — 8 "	4950 " —11 "
	8250 " — 4 "

40°C Ambient

Industrial Load	Residential Load
3500 Kv-a—16 Hours	2500 Kv-a— 9 Hours
7000 " — 8 "	4500 " —11 "
	7500 " — 4 "

Residential Load—Overload without exceeding guaranteed temperature

10°C Ambient

6000 Kv-a—20 Hours

9000 " — 4 "

TABLE IV

RATINGS OF 4800 VOLT THREE CONDUCTOR CABLES

Summer Schedule (May 15 to Nov. 15)

Cond. Size	40% D.L.F.		Normal Loading 60% D.L.F.		100% D.L.F.	
	Amps	Kv-a	Amps	Kv-a	Amps	Kv-a
450Mcm	360	2990	330	2740	285	2370
200M	240	2000	220	1830	190	1620
			Emergency Loading			
450M	420	3490	385	3200	335	2780
200M	265	2200	245	2040	220	1830
Winter Schedule (Nov. 15 to May 15)						
			Normal Loading			
450M	390	3240	360	2990	310	2580
200M	255	2121	235	1950	210	1745
			Emergency Loading			
450M	450	3740	410	3410	360	2990
200M	285	2370	265	2200	235	1950

NOTES: All ratings based on six similar cables in a 3 x 4 fibre duct bank.

Normal Loading: Same load on all cables. Copper temperature 85 C. Summer earth temperature 20 C. Winter earth temperature 10 C.

Emergency Loading: Five cables normally loaded, one cable carrying emergency load. Copper temperature 90 C. Summer earth temperature 15 C. Winter earth temperature 5 C.

D.L.F.—Daily Load Factor.

loads and the white areas the margin for growth.

Again, as in the case of generating plants, an understanding of Firm Ratings should aid in the choice of substation designs and unit sizes to give the lowest overall cost per kw of load carrying capacity.

In the field of sub-transmission and distribution substations the general limits are the same as those outlined for transmission stepdown stations. Where the sub-transmission lines are underground, the cable ratings (24 kv) for the different classes of load are those shown above in Table II. Table III shows also a typical emergency ratings assigned to a 6000 kv-a substation transformer. Fig. 2 shows the Firm Ratings for the distribution substation on a typical system employing underground sub-transmission to feed them.

In suburban territory where overhead sub-transmission lines are employed, the firm ratings of the distribution substa- emergency ratings of the distribution substation stepdown transformers. In small substations a single delta-connected transformer bank is often used and open-delta operation is depended upon for emergency service. The emergency rating of the remaining transformers is rarely set at less that 125% normal and may often be set higher if the load is predominately lighting.

Where small suburban substations are fed by a single radial sub-transmission line or are tapped to such a line through fuses, long outages are occasionally encountered with resultant concern as to the necessity for high voltage switching or for a second feed to the substation. In one such situation a careful study of system trouble records showed that such storms either occurred in the late afternoon before sundown or between midnight and morning, that is, outside the lighting load period. Therefore, the additional expense of switching or new sub-transmission could be rarely justified.

In the field of distribution lines themselves, the situation is somewhat different. On overhead distribution systems the lines are usually arranged so that when one so fails that its service cannot be restored by reclosing the substation breaker, it can be sectionalized and the sections connected to neighboring circuits. The maximum probable load then becomes the circuit peak plus the peak of the largest section of a neighboring circuit likely to be connected to it. The duration of this overload is long enough to repair the cable running into the substation, that is, one daily load period. The emergency rating is therefore determined by the cable running out of the substation or possibly by the circuit voltage regulator, if that is left in circuit. Table IV shows some typical emergency ratings for distribution cables and Table V for induction voltage regulators. Induction regulators are expensive and real savings are to be had by taking advantage of their inherent overload capacity. Table V shows also the day to day ratings of induction regulators for normal use taking account of the load cycle and the seasonal ambient temperatures.

In the field of underground A-C distribution, which usually means network, the problem is not unlike that of the distribution substation. The firm rating

(*Continued on Page* 260)

TABLE V

TYPICAL EMERGENCY OVERLOAD CYCLES FOR SELF-COOLED, THREE-PHASE INDUCTION VOLTAGE REGULATORS

125 Kv-a Regulator

Maximum Safe Load Cycles for Residential Load at Various Ambient Temperatures—

10°C	20°C	30°C
60 Kv-a— 9 Hours	56 Kv-a— 9 Hours	51 Kv-a— 9 Hours
109 " —11 "	101 " —11 "	94 " —11 "
181 " — 4 "	169 " — 4 "	156 " — 4 "

Maximum Safe Load for Cycle of 1/3 Load for 20 Hours and Full Load for 4 Hours
10°C Ambient
62.5 Kv-a—20 Hours
187.5 " — 4 "

Maximum Safe Load on Industrial Type Load Cycle
10°C Ambient
85 Kv-a—16 Hours
169 " — 8 "

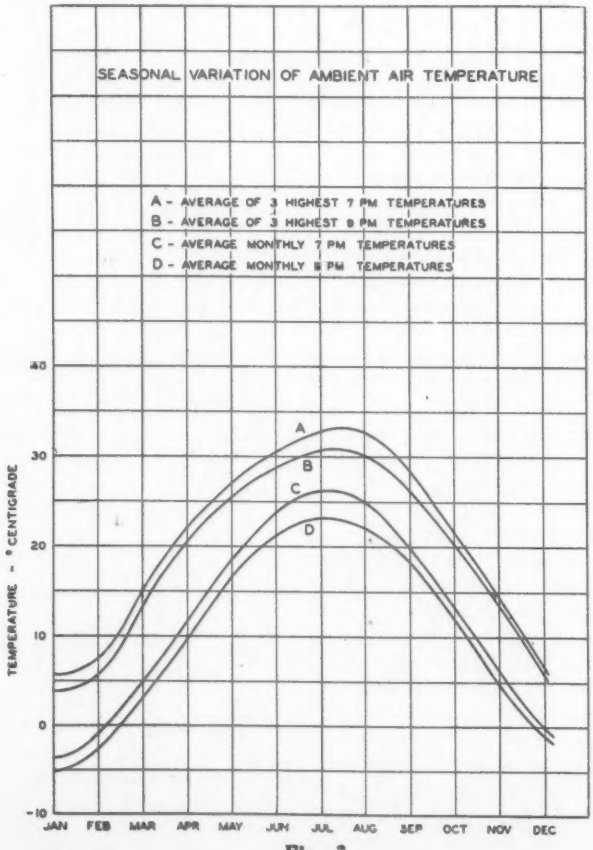

Fig. 3

The Institute's Fourth Convention

(Continued from page 200)

their consumers, present and prospective," he added.

Mr. Freeman's paper is an exhaustive presentation of the rural electrification situation extending from the original order of President Roosevelt and covering testimony of Administrator Cooke at Congressional committee hearings on numerous phases of the program.

Fourth Session

In the opening address of the Wednesday afternoon session, Dr. G. W. Allison, Field Representative of the Institute, declared the National Sales Programs provide the most effective channel through which to increase public appreciation and understanding of the electric industry.

"The consuming public," he said, "is a vital part of this industry. The consuming public is at one end of the industry and the generators at the other end of the industry."

As for reasons why the consuming public does not understand the industry, Dr. Allison mentioned the mysterious nature of electric service and the method of total amount billing. Comparisons of cost and dramatization of the service were two steps which must be taken, he said, and national sales programs are the agency for effecting these steps. The national Co-operative Sales Program and the Better Light-Better Sight activity were mentioned as theme song activities which have created an improved public understanding of the entire industry and provided the way for the industry to sell itself out of trouble.

The address by Mr. Frank T. Post on "The Campaign to Destroy" and one on a National Program for the Prevention of Blindness and the Conservation of Eyesight, by Mr. Lewis H. Carris, given at this session, are printed in full in this issue.

Air Conditioning, Portable Room Cooling Units and House Ventilation were the subjects discussed during the last half of this session by Messrs. C. E. Michel, Union Electric Light and Power Company, St. Louis; R. H. Tillman, Consolidated Gas, Electric Light and Power Company of Baltimore, and W. G. Moore, Texas Power and Light Company, Dallas, Texas.

Air conditioning as a good-will builder for the utility industry was praised by Mr. Michel. Five thousand kilowatts of air-condition load have been added by his company this year, he said, and recent developments in the portable unit since 1932 have given it a national acceptance applicable to consumers with wide ranges of income.

Mr. Tillman said that during the past six years simplification and standardization have resulted in a well-priced, practical load-building piece of equipment. The extent of the future market will depend upon the practical limits of one-room comfort cooling. The portable unit will be a stepping-stone, said Mr. Tillman.

W. G. Moore closed the program with his talk on house ventilation through the attic. The most generally accepted method of cooling was the term applied to attic cooling, particularly for Southern areas, and when used the utility should supervise the entire installation. This method of cooling was said to be the most practicable way at present of adding 400 kwhr per year to residential bills and to give customers at moderate cost the opportunity of making the first step toward home air conditioning.

Fifth Session

An address on Three Decades of Utility Sales Development, by C. E. Greenwood, Commercial Director, E.E.I., one on "How Can They Know," a discussion of employee attitude and training by Dr. Adam S. Bennion, Utah Power and Light Company, and the presentation of the Prize Awards by Mr. Frank W. Smith, Chairman of the Prize Awards Committee, were the features of the final session.

"In spite of the claims of governmental agencies to being the originator of modern utility methods of merchandising, electric sales development on a large scale began thirty years ago, and not three years ago, as many within administration circles would have the public believe," Mr. Greenwood declared in his address. "It is significant," he continued, "that in scanning every inch of the government 'yardstick,' we do not find one sales accomplishment in three years that has not been duplicated by some private utility in the past, and under more exacting conditions.

"Employee selling, cooperation with dealers and intensive selling campaigns by the utilities were not inspired by the goading of a government competition, but were the start of sound economic business development a score and more years ago."

Mr. Greenwood's address will be printed in next month's BULLETIN. Dr. Bennion's address and an abstract of Mr. Smith's report are printed in this issue.

Prize Awards

(Continued from page 230)

worth, Edison Electric Illuminating Company, Boston, Mass.; R. E. Kerns, Oklahoma Gas & Electric Co., Muskogee, Okla.

A. L. Lindemann Prizes
(Subject—Electric Cookers)

First Prize, $150—Miss Mayme E. Miller, Minnesota Power & Light Company, Duluth, Minn.

Second Prize, $100—Mrs. Edna Parrish, Utah Power & Light Company, Salt Lake City, Utah.

Third Prize, $50—Miss Ruth Wilda Williams, Detroit Edsion Company, Detroit, Mich.

James H. McGraw Prizes
(Subject—Engineering)

First Prize, $250—R. M. Hanson, Northern States Power Company, Minneapolis, Minn.

Second Prize, $150 — Elwood A. Church, Edison Electric Illuminating Company, Boston, Mass.

Third Prize, $100 — Wallace C. Rudd, New York Edison Company, Inc., New York, N. Y.

"Engineering Economics in the National Power Picture"

The papers presented April 22nd, under the auspices of the Western Society of Engineers at the Sixth Midwest Power Engineering Conference, Chicago, Illinois, have been printed in booklet form and are available, at 50 cents per copy, from the Western Society of Engineers, 1200 Engineering Building, 205 West Wacker Drive, Chicago, Illinois.

The booklet contains the following:

Introductory Remarks by the Chairman, J. R. Van Pelt
Engineering Criteria of Economical Power Supply .....Gordon Fox
The Unified Development of the Tennessee River System .....Dr. Arthur E. Morgan
The Nation's Power Supply: Its Economic Development Under Private Enterprise, Frank F. Fowle
The Coordination of Hydro and Steam Power .....H. G. Roby
Hydro versus Steam Power.....L. F. Harza
Discussion of "The Nation's Power Supply" .....Paul L. Battey
Discussion of "Engineering Economics in the National Power Picture"...Frank R. Innes
An Outside Engineer's View of TVA Development .....George W. Hamilton

Contributions of a Far-Flung Public Service Company

(*Continued from Page 229*)

articles; they may or may not be read by the people at the grass roots. It is our job to get these facts over to the men who would use them if they were available. While the facts may be produced by outstanding authorities, they must be personalized in their distribution. They must come from those whom the men at the "forks of the creek" know and believe. In our case, they should be distributed by the operating personnel; through paid advertisements over the signature of the division, district, or local manager. The "folks" know him as a law abiding, responsible citizen. They have learned to believe him, because he deals only in facts; not propaganda.

To my way of thinking, there should be set up in the national organization a fact finding agency, with men of ability to gather these facts and promulgate them in language easily understood. Nothing but facts will suffice.

I speak now my own sentiments only. I have not conferred with any one. Our national organization should be changed. The Geographic Divisions should be restored. The heads of the Geographic Division should be members of the Board of Trustees. The Operating Committee, as such, should be abolished and suitable committees substituted, making it possible to produce facts for distribution. Headquarters should send out to operating companies factual information in the form of suggested advertisements, which may be taken and used or revised by expert men in each operating company to suit that particular operating company's conditions.

Members of this organization, we are in the front line of attack. We are the first. Other businesses will follow. Since we are bearing the brunt of the attack, it behooves us to use facts as weapons, and facts—if properly presented—will prevail. In our hands, in a great measure, rests the destiny of America. In my humble judgment, whether our children and our children's children live in a land of unrivaled opportunity, as have you and I, depends in a great measure on us. No nation, in an equal time, if I read recorded history aright, has made such progress as ours. It is for you and me to determine whether we shall continue to live in the "land of the free and the home of the brave."

CONVENTIONS AND MEETINGS

JUNE

1-4 EDISON ELECTRIC INSTITUTE, Opera House, Municipal Auditorium, St. Louis, Mo.
8-9 North Central Electric Association, Nicollett Hotel, Minneapolis, Minn.
17-20 The American Society of Mechanical Engineers, Dallas, Texas.
22-25 National Association of Cost Accountants, Netherland Plaza Hotel, Cincinnati, Ohio.
22-26 American Institute of Electrical Engineers, Pasadena, Cal.
24-26 Canadian Electrical Association, Manoir Richelieu, Murray Bay, Quebec, Can.
29-30 American Society for Testing Materials, Chalfonte-Haddon Hall Hotel, Atlantic City, N. J.

JULY

1 American Society for Testing Materials, Chalfonte-Haddon Hall Hotel, Atlantic City, N. J.

AUGUST

31 Illuminating Engineering Society, Statler Hotel, Buffalo, N. Y.

SEPTEMBER

1-3 Illuminating Engineering Society, Statler Hotel, Buffalo, N. Y.
7-12 Third World Power Conference, Washington, D. C.
20-23 American Transit Association, White Sulphur Springs, W. Va.

OCTOBER

5-8 National Electrical Manufacturers Association, Cincinnati, Ohio.
26-30 American Gas Association, Atlantic City, N. J.

NOVEMBER

30 American Society of Mechanical Engineers, New York, N. Y.

DECEMBER

1-4 American Society of Mechanical Engineers, New York, N. Y.

Firm Ratings

(*Continued from Page 258*)

is determined by the one day emergency cable ratings as shown in Tables II and IV by the assumed overload rating of the network transformers which is quite commonly set at 150% normal rating. The overload period is usually one daily load period, since that gives time enough to repair a cable.

Ambient temperature is of course an important consideration in determining these overload ratings. Fig. 3 shows the results of a study based on U. S. Weather Bureau records to determine what ambient temperatures may be safely used. Similar data has been compiled for earth ambient temperatures and in some cases for city water ambient temperatures.

The above examples will serve to illustrate the applications of Firm Ratings most commonly encountered. It may be said that there is nothing new in Firm Ratings but that it is a convenient way of showing the resultant of the complicated and sometimes conflicting factors which enter into system loading and system design.

The time has passed when the operator of an electrical system can be just a glorified trouble shooter. If he is to succeed, he must know a "break" when he gets it and have the background and courage to take it.

This issue and the next issue of the Bulletin will carry the complete Convention addresses and papers. Since no formal proceedings of the Institute are published, it is suggested that these issues be preserved for your Convention record.

Extra copies of the Bulletin are available from

EDISON ELECTRIC INSTITUTE
420 Lexington Avenue, New York, N. Y.

Discounts will be given on quantity purchases.